MAR 31 1930

The Emerson Hotel, Baltimore, Will Be Headquarters for the Meeting of the American Pharmaceutical Association during the Week of May 5th—See Your Railroad Agent Early and Ask Him to Get Information on the Meetings in Baltimore and Washington.

Vol. XIX, No. 3 MARCH, 1930

JOURNAL
OF THE
AMERICAN PHARMACEUTICAL ASSOCIATION

TRADE MARK

CONTENTS

Frontispiece and Sketch—Wolfgang Ostwald 211
Editorial:
The United States Pharmacopœial Convention 213
Dispensing by Physicians 214
Esperanto in Pharmacy 214
Historical Inaccuracies 215
Notice from Transportation Committee—Bradley 215
Scientific Section:
$\Delta^{1,4}$-Terpadiene-Dione-3,6-Sulphonate of Potassium-2 (or 5). (Carstanjen's Compound)—Hewitt 217
The Pharmacology of Ergot: With Special Reference to Biological Assay and Standardization—Thompson 221
A Note on the Actions of "Eriocomine" a Constituent of Eriocoma Floribunda—Tainter and Seidenfeld 229
Comparative Marrubiin Content in Marrubium Vulgare from European *vs.* American Seed—McCrea 231
Aqua Hamamelidis N. F.—Hamamelis Water, Witch Hazel Water, Distilled Extract of Witch Hazel—Hilton 232
A Study of the Emodin-Bearing Group of Cathartics. Part I—Valaer, Jr. 235
Bibliography of Pharmaceutical Research—DuMez 244
Commercial Aspects of Professional Pharmacy 247
Garcia da Orta and the First Descriptions of Asiatic Drugs—Roddis 251
Department of Business Management:
Comments, Questions and Suggestions Are Invited and Welcome 254
How to Reduce Salary Costs—Olsen 254
The Department of the American Association of Colleges of Pharmacy:
Prescription Pricing—Bachman and Almin 257
Gmelin, a German Family of Pharmacists, Chemists and Botanists—Raubenheimer 259
The Apothecary in Literature—Kremers 265
Pharmaceutical and Medical Knowledge of Balzac—Warren 272
Reminiscences of Early Pharmacy in Baltimore—Culbreth 282
Proceedings of the Local Branches 289
Association Business 297
Editorial Notes 300
Personal and News Items 303
Obituary 304
Societies and Colleges 305
Legal and Legislative 307
Book Notices and Reviews 310
Advertising—Cover Pages 2, 3 and 4 and pp. I–XXIV.

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THE 78th ANNUAL MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION WILL BE HELD IN BALTIMORE, DURING WEEK OF MAY 5, 1930.

The 1930 Meetings of the American Association of Colleges of Pharmacy, the National Association of Boards of Pharmacy, Conferences of Pharmaceutical Association Secretaries and of Pharmaceutical Law Enforcement Officials will also be held at Baltimore, same time and place.

Local Secretary—Samuel Y. Harris, Lombard & Poppleton Sts., Baltimore, Md.

For Association Roster and Roster of the Boards of Pharmacy, of Officers of Pharmaceutical Associations, Local Branches, see pages x, xii, xiv, etc.

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ARCANOL

AN INVITATION AND A MESSAGE FROM THE CHAIRMAN OF THE HOUSE OF DELEGATES, A. PH. A.

R. L. SWAIN, CHAIRMAN OF THE HOUSE OF DELEGATES.

IT is with real pleasurable anticipation that the pharmacists of Baltimore and the State of Maryland look forward to the forthcoming convention of the AMERICAN PHARMACEUTICAL ASSOCIATION. The annual meeting of this distinguished organization is the outstanding event in pharmaceutical circles and merits the fullest consideration at the hands of the city fortunate enough to be the host. Baltimore appreciates its responsibility and its opportunity. A hearty and sincere Maryland greeting is assured. The state and municipal governments, the pharmaceutical organizations of the state, the local committee, under the inspiring leadership of Mr. Samuel Y. Harris, as well as every member of the pharmaceutical profession, unite in extending an earnest invitation.

R. L. SWAIN.

Baltimore has contributed five presidents to the AMERICAN PHARMACEUTICAL ASSOCIATION, and has had a large part in establishing and maintaining the high position which it occupies in the professional and scientific life of the country. In extending this invitation, the city is glad to reaffirm its confidence and to restate its pride in the accomplishment and developments of the ASSOCIATION.

It is hoped that the Baltimore convention may be the largest in the history of the ASSOCIATION. Each year makes the convention of greater importance and thus of greater value to the great professional group which it represents. While there are many matters of deep professional and material concern to come before the convention and many topics of far reaching significance to be discussed, there will be time for pleasure and entertainment. Baltimore has set itself to the pleasant duty of filling every idle moment with some enjoyable experience. Baltimore is a city of fine traditions, of world famous institutions, of a culture marked by strong educational progress, and with it all a friendly hospitality which is one of the city's greatest charms.

In addition, Baltimore is closely adjacent to the National Capital and to other places of great historic interest. Within a short ride are the great battlefields of Gettysburg and Antietam as well as many other places of great interest. Attendance at the Baltimore Convention of the AMERICAN PHARMACEUTICAL ASSOCIATION may be made a real enjoyable vacation.

And a sincere welcome awaits you.

Wo. Ostwald

JOURNAL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION

VOL. XIX MARCH, 1930 No. 3

WOLFGANG OSTWALD.

Dr. Wolfgang Ostwald, who was elected an honorary member of the AMERICAN PHARMACEUTICAL ASSOCIATION at the meeting in Rapid City, is professor of Colloid Chemistry in the Physico-Chemical Institute of the University of Leipzig. He was born, the son of Wilhelm Ostwald, the internationally famous chemist and Nobel laureate, in Riga, Old Russia, May 28, 1883. The assumption of the chair of Physical Chemistry in the University of Leipzig by the father brought young Ostwald into Germany, and here, in the crowded and growing quarters of what was destined to become the Institute for Physical Chemistry, young Ostwald learned the elements of science, being able to count as playmates and "uncles" such men as Arrhenius and van't Hoff, and as friendly visitors the whole international group that made the heyday in chemistry of the twenty-five years about the turn of this century.

Wolfgang Ostwald did not, however, develop into a physical chemist or any other kind of chemist of that day. His first interest was in biology. When but fourteen years old he began to write—on Darwinism. Upon entering the University of Leipzig, he majored in biology under Karl Chun then its professor of Zoölogy and Zoötomy. Following some first contributions of lesser significance, Ostwald published (at the age of twenty) a series of papers on the depth migration of the plankton which, because they explained, and for the first time, correctly, the movement of living organisms in the surface waters of the sea, assured him a permanent name in the history of physiological biology. Briefly formulated, he showed how these organisms rose and sank in the sea depending upon the internal viscosity of the water as influenced by heat, light, chemical constitution and the properties of the organism.

Following some studies on the poisonous effects of salts and distilled water upon the living organism, he became interested in how the colloids of the organism are affected by such changes. The raising of this question in his mind changed completely his point of view in science and we find him next studying the behavior

of colloids directly. In 1904 and 1905 he worked on the swelling of gelatin and thus threw his interests with Hofmeister, Hardy, Pauli and Spiro, who had been the first to try to discover the explanation of life phenomena through the behavior of the colloids. But the general problem of the nature of the colloids themselves was at that time in a state of flux and young Ostwald was shortly in the realms of pure colloid chemistry itself, as then espoused by Picton and Linder, Zsigmondy, A. A. Noyes, Paal, Lottermoser, von Weimarn and Goppelsroeder. In 1907 in the first volume of the *Kolloid-Zeitschrift* (then edited by Rudolf Ditmar) he published a lengthy article on the classification of the colloids which he expanded in 1909 (in Oppenheimer's "Handbuch der Biochemie") and later in the same year brought out as the original "Grundriss der Kolloidchemie." This volume represented not only the first adequate text covering this field historically, critically and scientifically, but it marked the birth of colloid chemistry as an "independent" division in chemistry. This work was more, however, than a summary of the labors of other men, for in it Ostwald developed the definition and the classification of colloid systems as they have been accepted ever since. Beginning with the second volume of the *Kolloid-Zeitschrift* (in 1907) young Ostwald became its editor and he has continued as such to the present day when the volume number has reached fifty. The *Kolloid-Zeitschrift* early proving inadequate for the publication of all the international communications offered it, Ostwald started the *Kolloidchemische Beihefte* which beginning in 1910, is now in its thirtieth volume.

Since the initial issue of his Grundriss this text, in revised form (the first half only) has gone through seven editions. In English translation, it has gone through two editions. In 1914, Ostwald was the invited lecturer to several universities and scientific bodies in the United States. He published these lectures in book form as "Die Welt der vernachlässigten Dimensionen" in 1915, since which time the volume has gone into its tenth edition. As "An Introduction to Theoretical and Applied Colloid Chemistry," it appeared in English and has gone through two editions. He is the author also of a laboratory manual of colloid chemistry, now in its fifth edition and a monumental monograph, "Licht und Farbe in Kolloiden" which appeared in 1924.

To the list of these volumes (which have been the source for the most part of all the general texts of colloid chemistry in all the different languages of our times and good in proportion to the accuracy with which they have held to Ostwald's teachings) must be added a sheaf of lesser communications and on all manner of subjects. There are studies on the effects of light on oxidative ferments, growth as an autocatalytic process, biographical notes on living and dead workers in colloid chemistry, historical presentations of the development of colloid chemistry, new methods and new apparatus, scientific discussions of physico-chemical principles as applied to colloid chemistry, and the employment of colloid notions in baking, metallurgy, rubber chemistry, plastic masses, pharmaceutical chemistry and a dozen other practical fields.

A versatile mind, a hard worker and as good an example as our time yields of the still catholic spirit of science!

December 1929. Martin H. Fischer.

EDITORIAL

E. G. EBERLE, EDITOR 10 West Chase St., BALTIMORE, MD.

THE UNITED STATES PHARMACOPŒIAL CONVENTION.

THE selection of the delegates to the eleventh U. S. Pharmacopœial Convention, if not of greater importance than the selection of the Committee for revising the Pharmacopœia, and the Board of Trustees for managing its business affairs, is the first important step of a decennial revision. The bodies entitled to representation in this convention have been urged to be fully and adequately represented, and the evident interest indicates that the Convention will be representative and composed of delegates who are fitted for and realize their responsibilities in the work before them, without any influence of personal favor or prejudices that may obscure judgment, and concerned only with a purpose of laying the best plans for this important undertaking, which concerns deeply the public and the professions.

In the selection of the members of the Committee of Revision and the Board of Trustees delegates will express their viewpoints as to the qualifications of the individuals chosen to discharge the duties resting upon these three groups. Experience in the past indicates that these selections will be made wisely and with a realization of the responsibility resting upon the delegates to continue the progressive improvement of our Pharmacopœia. It is also the duty of the delegates to lay down General Principles for the guidance of the officers of the Convention, the Committee of Revision and the Board of Trustees during the new decade, after considering the reports and recommendations, of those who have carried on the work during the period now coming to a close. Several questions that have an important bearing on the character and usefulness of the Pharmacopœia will be decided by the delegates in drawing up General Principles. The most important probably is whether the Pharmacopœia shall include only drugs and preparations for which tests and standards capable of verification can be applied, or whether others that are in quite general use by the medical profession and largely employed by the industries in the manufacture of products for which there is a general demand by physicians and the laity shall also be given official recognition.

A review of medical and pharmaceutical literature is convincing that viewpoints differ with individuals and with time, hence, the question of inclusions and deletions is a most important one, involving a consideration of whether it is best to include substances in general use, but at present without official recognition, or to leave these to standardization by other agencies which may not always be based on practical experience. A consideration of the stability of certain important drugs and preparations is another subject of convention interest in view of the questions that have been raised as to their permanency under the conditions which exist.

It is not the purpose of this comment to discuss momentous revision matters, but rather by these brief references to impress in a general way the need for positive thought relative to the work which will engage the Convention on May 13th. Progressive changes are occurring in the practice of medicine and pharmacy and the other professions and sciences related to public health and it is the duty of the delegates to study every phase of the work before them and to so plan that the U. S. Pharmacopœia XI will meet the requirements of the decade. Few books rank with

the Pharmacopœia in importance when its place in many activities and its part in the conservation of the life and health of the people is considered.

DISPENSING BY PHYSICIANS.

RESPONSES to a questionnaire sent out by *Medical Economics* has brought replies from 10,502 physicians, indicating that of this number, 2496 dispense exclusively; 4281 dispense partially; and 3725 do not dispense at all. The results as to population are about as follows: In communities of less than 5000, 1429 dispense exclusively; 1367 partially, and 789 not at all; the relations in cities up to 25,000 are 332, 779, 632; up to 100,000, 204,587, 491; larger cities, 531, 1548, 1813.

The foregoing results are published because they are worthy of study by pharmacists, whereby opportunities may be opened to bring about relations between physicians and pharmacists which will benefit the laity and perhaps reduce the extent of office dispensing. The practice of medicine and of pharmacy exist for the benefit and protection of the public, therefore discussion of the situation should be productive of good in various ways, because better professional relations benefit all groups. With a knowledge of conditions pharmacists should find a partial solution by either supplying the physicians with the products required by them, or encouraging them to write prescriptions.

Several deductions are made from the responses to the questionnaire; according to these the ratio of doctors who dispense has increased with the number of years they have been engaged in the practice of medicine, and more of them are dispensing than formerly. A greater number of manufacturers solicit patronage from doctors and at least some of the establishments supplying the doctors are growing.

Evidently, pharmacists have opportunities for bettering the situation by discussing all phases with their fellow citizens—the doctors. Attention is directed to the editorial of *Modern Surgery*, reprinted in the February JOURNAL, page 100. The application of right principles is essential to effect right relations; the attitude and spirit are all-important. The most potent measure for bringing about an understanding of the mission of professions is reasonable, rational discussion, with the purpose of devising means for improving their services to the public.

ESPERANTO IN PHARMACY.

THE matter of using Esperanto in pharmacy has been given consideration in Japan in connection with a discussion on an international pharmacopœia and fixing standards for potent drugs. When the 17th general meeting of Esperantists met in Tokyo last September, at which meeting more than forty pharmacists were present, a special group was formed, who discussed ways and means for the extension of the use of Esperanto among pharmacists. A resolution was also adopted to advise with authorities to establish a chair of Esperanto in colleges of pharmacy.

The thought may not be misplaced that the suggestion is worthy of consideration by the International Pharmaceutical Federation and, if so, the colleges of pharmacy would probably be willing to consider the possibility and advisability of introducing Esperanto as part of the pharmaceutical curriculum.

The article responsible for this comment, refers to a number of reports of various technical societies and institutes of Japan wherein Esperanto was used wholly or in part.

HISTORICAL INACCURACIES.

AT the Rapid City meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION, before the Section on Historical Pharmacy, Dr. Edward Kremers contributed an article "Writing Pharmaceutical Biography and History,*" in which he points out the danger of misstatements that are carried from one record to another, and stand for truth until the error is discovered, when there may be great difficulty in obtaining facts. Recently we noted a related statement on state historical records, wherein it was pointed out that historical inaccuracies are often due to imperfect records, gathering together of fragments and supplying defects; other causes are motives of magnifying influence or efforts to establish priority, whereas the aim should be truth. Too often favorable tradition has been accepted without critical use of primary sources.

NOTICE FROM TRANSPORTATION COMMITTEE.

EXCURSION RATES TO BALTIMORE AND WASHINGTON.

BY T. J. BRADLEY, CHAIRMAN.

A REDUCED rate of one and one-half fare for the round trip from all or most sections of the country, on the certificate plan, will be allowed to those who attend the annual meeting of the ASSOCIATION in Baltimore, on condition that the reduced number of 150 or more certificates are turned in. Also, the time for beginning the return journey is extended, so that members can stay over for the United States Pharmacopœial Convention in Washington the following week if they wish to do so. The reduced rate will be allowed to members and their families, including children from 5 to 12 years, who will be charged half the fares for adults.

The following directions should be carefully observed.

1. Tickets at the regular one-way tariff fares for the going journey may be obtained on May 1st to 7th from most sections of the country, and a few days earlier than these dates from the far west and southwest, but not on any other dates. Be sure that when purchasing going ticket you request a separate CERTIFICATE for each ticket, on account of the convention of the AMERICAN PHARMACEUTICAL ASSOCIATION. *Do not make the mistake of asking for a "Receipt."*

2. Present yourself at the railroad station for tickets and Certificates at least 30 minutes before departure of train on which you will begin your journey.

3. Certificates are not kept at all stations. If you inquire at your home station, you can ascertain whether Certificates and through tickets can be obtained to the place of meeting. If not obtainable at your home station, the agent will inform you at what station they can be obtained. You can in such case purchase a local ticket to the station which has Certificates in stock, where you can purchase a through ticket and at the same time ask for and obtain a Certificate to place of meeting.

* JOUR. A. PH. A., 18 (October 1929), 1032.

4. Immediately on your arrival at the meeting present your Certificate to the endorsing officer, E. F. Kelly, Secretary, as the reduced fares for the return journey will not apply unless you are properly identified as provided for by the Certificates.

5. It has been arranged that the Special Agent of the carriers will be in attendance on May 7th and 8th from 8:30 A.M. to 5:30 P.M., to validate Certificates. If you arrive at the meeting and leave for home again prior to the Special Agent's arrival, or if you arrive at the meeting later than May 8th, after the Special Agent has left, you cannot have your Certificate validated and consequently you will not obtain the benefit of the reduction on the return journey.

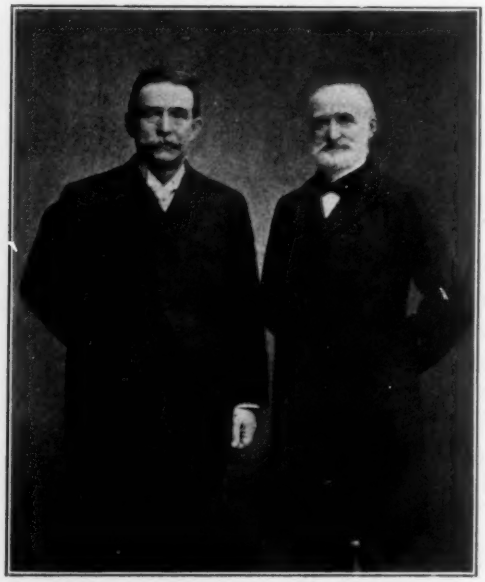
6. So as to prevent disappointment, it must be understood that the reduction on the return journey is not guaranteed, but is *contingent on an attendance of not less than 150 members of the organization and dependent members of their families,* holding regularly issued Certificates obtained from Ticket Agents at starting points, from where the regular one-way adult tariff fares to place of meeting are not less than 67 cents on going journey.

Certificates issued to children at half fares will be counted the same as Certificates held by adults.

7. If the necessary minimum of 150 Certificates are presented to the Special Agent, and your Certificate is duly validated, you will be entitled up to and including May 21st to a return ticket *via* the same route over which you made the going journey at *one-half of the regular one-way tariff fare* from the place of meeting to the point at which your Certificate was issued.

8. Return tickets issued at the reduced fares will not be good on any limited train on which such reduced fare transportation is not honored.

9. No refund of fare will be made on account of failure to obtain proper Certificate when purchasing going tickets, nor on account of failure to present validate Certificate when purchasing return ticket.



CHARLES E. DOHME, ELECTED PRESIDENT OF THE A. PH. A., AT THE LAST BALTIMORE MEETING; AND DR. FREDERICK HOFFMANN.

Left.—Charles E. Dohme, president of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1898–1899. Mrs. Dohme is in her 90th year; she is looking forward to a visit from old friends during the Baltimore meeting. President Dohme died December 7, 1911. Right.—Dr. Frederick Hoffmann; he prepared the 50th anniversity address, A. PH. A., but the condition of his health did not permit his stay in this country to deliver it in person; it was read by Secretary Charles Caspari, Jr.—See PROCEEDINGS, A. PH. A., 50 (1902), 100–145. Dr. Hoffman died November 30, 1904.

Dr. A. Tschirch of Berne, Switzerland has been invited to deliver the "Dohme Lecture," in Baltimore, this fall.

SCIENTIFIC SECTION

$\Delta^{1,4}$TERPADIENE-DIONE-3,6-SULPHONATE OF POTASSIUM-2 (OR 5). (CARSTANJEN'S COMPOUND.)

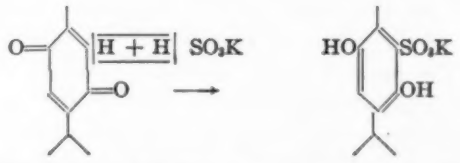
BY H. G. HEWITT.

In 1877 Carstanjen[1] recorded some interesting observations concerning the action of potassium sulphite on quinones. He tested the capacity of reaction of the quinone grouping with alkali sulphites presumably in the sense in which the latter react with aldehydes and simple ketones. In other words, he was interested in ascertaining the additive capacity of the carbonyl groups of the quinones, diketones, for alkaline sulphites. While he tried out the quinones of benzene, toluene, xylene and cymene, more correctly the paraquinones of dihydro derivatives of these hydrocarbons, his principal observations were made with the last of these four diketones, the thymoquinone.

Having started out with the thought of the addition of acid sulphites to simple aldehydes and ketones, his first conclusion as to the reaction between thymoquinone and potassium sulphite was that addition of potassium acid sulphite had taken place. However, the behavior of the reaction product was such as to compel a different interpretation. The reaction as interpreted implies, first of all, the hydrolysis of potassium sulphite to potassium acid sulphite and potassium hydroxide, *viz.*

$$K_2SO_3 + H_2O = KHSO_3 + KOH$$

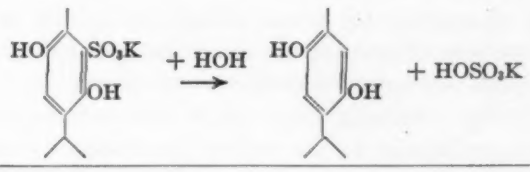
The alkalinity of the reaction mixture readily substantiates this first phase of chemical change. The subsequent reactions are best expressed by means of modern structural formulas.



This reaction corresponds to the action of hydrogen chloride on quinone resulting in the formation of chlorhydroquinone

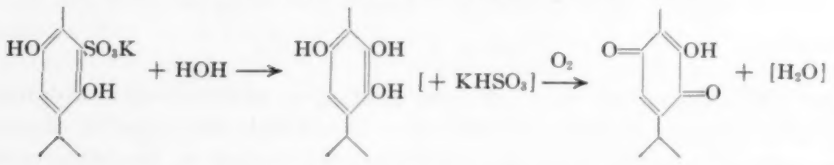
$$C_6H_4O_2 + HCl \longrightarrow C_6H_3Cl(OH)_2$$

If to a solution of the acid potassium sulphite addition product hydrochloric acid be added, the solution remains clear on standing. Boiling, however, causes it to congeal to a crystalline mass of hydrothymoquinone, whereas the solution contains sulphuric acid.

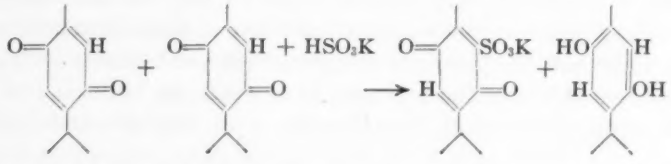


[1] *J. prakt. Chem.*, 123, page 478.

If, however, caustic alkali be used as hydrolizing agent, the solution becomes reddish brown immediately, absorbing oxygen energetically. If, then, hydrogen chloride be added to acidity, hydroxythymoquinone is precipitated.



The "purple-violet" color observed by Carstanjen when this oxidation in alkaline solution takes place would seem to indicate the formation of quinhydrone or phenoquinone. The formation of the latter can be accounted for by the addition of two molecules of monohydroxythymoquinone, regarded as monatomic phenol, to one molecule of the same compound, regarded as diketone or quinone. The formation of quinhydrone could be assumed if the initial reaction took place in a somewhat different manner, namely, as indicated by the following formulas:



In order to ascertain which of the two sets of reactions takes place, it will be necessary to find out whether hydrothymoquinone is formed or not. This in itself is of sufficient interest when viewed in the light of the reactions between thymoquinone on the one hand and such substances as hydrogen chloride and benzene sulphinic acid on the other hand. Moreover, Carstanjen's compound, whatever the position of the sulphone group—for the sake of simplification only the hydrogen nearest the methyl group has been involved in the structural formulas—ought to prove a convenient stepping stone in the production of at least one of the hydroxythymoquinones. For this reason alone, the reaction should be submitted to a more careful study. Inasmuch as the substitution of sodium sulphite for potassium sulphite some years ago, resulted in the production of tarry masses instead of the handsome crystals of the Carstanjen compound, the investigation called for extension in this direction. Whether this is a matter of individual difference between potassium and sodium or a question of alkalinity, called for an answer. If a question of alkalinity, could not the difficulty be overcome by using a weaker sodium sulphite solution, or by neutralization of the alkali, formed upon hydrolysis of the alkali sulphite in the presence of thymoquinone, with sulphurous acid or acid sulphite?

Given a ready method for the preparation of one of the two hydroxythymoquinones, an entirely new chapter in the investigation of the oxidation products of cymene, from thymol and carvacrol to dihydroxythymoquinone, is made possible. The lability of the one remaining hydrogen in the monohydroxythymoquinone suggests all sorts of possibilities for the further investigation of this group of compounds which plays so important a rôle in the biochemistry of the Monardas and, no doubt, of many another genus of plants, particularly of the *Labiate* family.

As already intimated, Carstanjen gives no specific directions for the preparation of this compound. By way of orientation, therefore, several experiments were made in a rather hit or miss manner using 20 p. c. solutions of both potassium and sodium sulphites. Care was taken to use material from bottles that had been sealed until used, but it was learned later that the sulphites were of poor quality. Nevertheless, the results may, herewith, be recorded if for no other reason than to show how unsatisfactory Carstanjen's directions are.

To the solutions, heated to 60° in an Erlenmeyer flask, thymoquinone was added and the heating continued to 90°. While shaking continually, more thymoquinone was added until an excess of the diketone had been used as became apparent from a red oily layer floating on the surface. Without filtration, the reaction mixtures were transferred to beakers and allowed to cool. From the cooled reaction mixtures the crystals which had formed were separated by filtration and the mother liquids were allowed to evaporate to dryness.

Of the three separate experiments made with potassium sulphite, the reaction mixtures yielded yellowish crystals which burned with a flame, hence appeared to be Carstanjen's compound. However, the presence of white crystals in at least two of the products showed that they were not a uniform product. Ignition yielded 32.7 p. c., 45.7 p. c. and 29.5 p. c., respectively, of residues. Carstanjen's compound should yield 30.5 p. c. of residue computed as sulphite and 36.15 p. c. as sulphate.

From the three separate experiments made with sodium sulphite, colorless crystals separated upon cooling which effloresced upon standing. They contained but traces of organic matter if any. They gave tests for sulphates, hence were presumably $Na_2SO_4 . 10\ H_2O$ which lost water of crystallization at room temperature. When heated in a crucible the residue amounted to 108.6 p. c., 109.2 p. c. and 54.5 p. c., respectively. Results one and two may be accounted for by assuming an oxidation of sulphite to sulphate.[1] The third result, however, seems unaccountable, since the substance did not even char.

The filtrates from these compounds, as already stated, were allowed to evaporate. The residues showed but little organic matter to be present. Nevertheless, the crystalline masses were acidulated with dilute sulphuric acid and distilled with water vapor. The distillate showed no traces of thymoquinone, neither did the hot filtrate separate hydrothymoquinone upon cooling.

In order to correct the unsatisfactoriness of quantitative directions in Carstanjen's method of preparation, definite amounts were now taken on a molecular basis.

$$\underbrace{C_{10}H_{12}O_2}_{164} \simeq \underbrace{K_2SO_3 . H_2O}_{194} \qquad 194 : x = 35 : x \qquad x = 29.38$$

To a solution of 35 Gm. of sulphite in 100 cc. of water, heated to 60°, 5 Gm. of thymoquinone were added and the reaction mixture heated to 90° with constant shaking. Upon cooling masses formed with brown, hard shiny surfaces but soft and tarry under the crust. After 24 hours the reaction product was removed by filtration.

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[1] $\underbrace{Na_2SO_3}_{126} : \underbrace{Na_2SO_4}_{142} = 100 : x \qquad x = 112.69$

Like experiments were repeated with 7.5, 10.0, 12.5 and 15.0 Gm. of thymoquinone. In each case the initial yellow color of the reaction mixture increased with the increase in temperature from 60° to 90°. With the increase in the amount of thymoquinone used the final color increased from light yellow to purple. With one exception (10 Gm.), the color remained unchanged upon cooling. In this instance it changed from orange-red to yellow. The yields show no satisfactory regularity, fluctuating from 1.22 Gm. to 6.44 Gm. to 10.45 Gm. to 4.18 Gm. to 16.15 Gm. All of these products burned with a flame showing the phenomenon of intumescence. The first crop consisted of white crystals, the second and third crops of faintly yellowish crystals, and the fourth and fifth crops had a permanganate tinge.

These experiments were repeated with smaller amounts of thymoquinone and normal solution of potassium sulphite. The alkalinity of the reaction mixture, after cooling, was titrated with $N/10$ sulphuric acid. The end reaction was more or less interfered with by the color of the reaction mixture. In one instance (2.9 Gm. of thymoquinone) no end reaction was observable, hence the large amount of standard acid added.

Amount thymoquinone.	$N/10$ H_2SO_4.	Color of solution after titrating.
0.41	*a* 26.2 cc.	Orange
	b 26.3 cc.	
0.82	*a* 26.6 cc.	Orange
	b 26.5 cc.	
1.20	*a* 26.0 cc.	Orange
	b 26.1 cc.	
1.6	*a* 23.8 cc.	Beautiful pink crystals
	b 23.9 cc.	Hydrothymoquinone?
2.1	*a* 23.8 cc.	Bright orange-yellow crystals (0.1 Gm.)
	b 23.9 cc.	Thymoquinone?
2.5	*a* 19.9 cc.	Brown-yellow ppt. (0.1 Gm.). Black
	b 20.0 cc.	Thymoquinone? Quinhydrone?
2.9	*a* 225.0 cc.	Yellow cryst. in suspension (2.71 Gm.)
	b 18.0 cc.	Thymoquinone? Black cryst. Quinhydrone?
3.2	*a* 42.1 cc.	Dirty brown-yellow ppt. in susp. (0.04 Gm.)
	b 42.0 cc.	Thymoquinone? Black ppt. on bottom
3.7	*a* 21.5 cc.	Brownish red quinhyd. residue?
	b 21.7 cc.	(1.35 Gm.)
4.2	*a* 22.5 cc.	Brownish
	b 22.4 cc.	Black tarry residue. (1.85 Gm.)

The results tabulated above clearly reveal the unsatisfactoriness of these quantitative determinations.

The combined reaction mixtures (*a* and *b*) of each titration were subjected to distillation, about one-half of the liquid being distilled over. The residue was filtered while still hot. The tarry portion which remained in the distilling flask was refluxed with fractol, but no crystals could be obtained.

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THE PHARMACOLOGY OF ERGOT: WITH SPECIAL REFERENCE TO BIOLOGICAL ASSAY AND STANDARDIZATION.

(The bibliography will follow last article of the series.)

VI. A METHOD FOR THE PREPARATION OF A PURIFIED FLUIDEXTRACT OF ERGOT,* INCLUDING PHARMACOLOGICAL STUDIES.

BY MARVIN R. THOMPSON.[1]

The majority of present-day pharmacologists agree that the therapeutic value of ergot or its preparations is wholly dependent upon the specific alkaloidal content. These alkaloids represent but a small portion of the extractable material occurring in the crude drug, although not all of this material is pharmacodynamically active. In addition to the specific alkaloids, the extractable material includes the coloring principle known as sclererythrin, 10 to 35% of a fixed oil, exceedingly variable proportions of a series of water-soluble amines (histamine, tyramine, etc.) and very appreciable amounts of inert proteinogenous substances.

The manufacture of a Fluidextract of Ergot by the process specified in the U. S. P., 10th Revision, has been found to result in a preparation which contains practically all of the alkaloids and amines which are present in the parent drug (42). In addition to these pharmaco-dynamically active principles, much of the inert extractive material is also contained in the finished product. Because of its alcohol and acid content, Fluidextract of Ergot is suitable only for oral administration.

Of all the various constituents associated with ergot, only the specific alkaloids (ergotamine and ergotoxine), and the non-specific amines (histamine and possibly tyramine) have been found to exist in sufficient amounts to exhibit significant pharmaco-dynamic activity from reasonable doses. The alkaloids are active by either oral or hypodermic administration, but histamine, to which practically all of the non-specific amine activity of ergot is due, shows activity only when injected intravenously or intramuscularly. It is destroyed in the gastro-intestinal tract when given orally (14). Mammoser, Albi and Boyd (46) observed no absorption of histamine when introduced into the duodenum and colon of anesthetized dogs in doses of 5 mg. per Kg. Even when administered hypodermically, histamine produces only a very transitory effect upon the uterus of experimental animals and it is believed that the doses required as a parturient would be so large as to be actually dangerous because of the transitory, but powerful depressant effect of histamine upon blood pressure. The fact that histamine is the most powerful of all of the constituents of ergot in stimulating contractions of *excised* or *isolated* smooth-muscle tissue is undoubtedly responsible for the belief among many of the earlier investigators that the observed clinical efficacy of ergot was due principally to this constituent. Reasons for the proven ineffectiveness of histamine by

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* Method developed at the Department of Pharmacology, College of Pharmacy, George Washington University; included in thesis submitted June 1, 1929; pharmacological studies carried out in the Pharmacological Laboratory of the Food, Drug and Insecticide Administration, U. S. Department of Agriculture.

[1] Assistant Pharmacologist, Pharmacological Laboratory of the Food, Drug and Insecticide Administration; U. S. Department of Agriculture, Washington, D. C.

oral administration have already been cited. Its unsuccessful hypodermic use in parturition cannot be attributed to poor absorption but recent pharmacological studies indicate that other factors prevent significant activity, as follows:

(*a*) *The natural resistance or protective mechanism of the body against histamine.*

In a preceding article of this series (42), epinephrine was shown to inhibit or antagonize the effect of stimulating concentrations of histamine upon the isolated uterus of the rabbit, *i. e.*, epinephrine could be made to abolish the response of the isolated uterus to histamine. Perla and Marmorston-Gottesman (43) have described experiments which clearly demonstrated the protective influence afforded against histamine poisoning in suprarenalectomized rats by the subcutaneous administration of epinephrine. Weiss, Soma, Ellis and Robb (45) reported extensive experiments involving the continuous and uniform intravenous administration of histamine to man, in which they observed that the introduction of 0.02–0.04 mg. of histamine per minute of a solution 1 : 10,000 was destroyed almost as rapidly as it entered the blood stream, thereby affording excellent evidence of an epinephrine-histamine antagonism in humans, and concluded that epinephrine, in a ratio of 1 : 30 antagonizes the effect of histamine on the cutaneous and cranial vessels, and that this epinephrine-histamine antagonism varies for different functions affected by histamine.

Thus, the foregoing experimental evidence adequately explains the unsuccessful use of histamine as a parturient or oxytocic by either oral or hypodermic administration, and also accounts for the fleeting or transitory nature of the effects produced by even relatively large intramuscular or intravenous doses.

(*b*) *Ergot alkaloid-histamine antagonism.*

Parts II (38) and III (39) of this series of articles contained evidence of an ergot alkaloid-histamine antagonism. The contractions induced by histamine on the isolated guinea-pig uterus could be inhibited or totally abolished by the action of ergot alkaloids. Geiger (44) also demonstrated this ergot alkaloid-histamine antagonism in studies on isolated frog liver. Histamine, in a concentration of 1 : 50,000 was found to increase the glycogenolytic effect of isolated frog liver. By first treating the liver with ergotamine (1 : 10,000), the histamine effect was prevented.

Articles IV (41) and V (42) of this series contained conclusive evidence that it would be practically impossible to insure defined amounts of the amines in a Fluidextract of Ergot even if their inclusion with the alkaloids were desirable. First, in confirmation of earlier reports of other investigators, the amines were found to be non-specific for the drug, some samples being apparently devoid of histamine or tyramine, others containing quantities varying from traces to over 0.1% of active amines, the most important of which was histamine. Second, the active amines of ergot were found to be very unstable in the menstruum of the fluidextract, causing a disappearance of significant amine activity within a period of several months even in samples originally showing an unusually high amine content (see Part V, (42) of this series of articles).

One would therefore be led to conclude, after a consideration of available information, that the non-specific amines are not responsible for any of the desirable clinical effects of ergot when administered alone or in mixture with the specific alkaloids, by either oral or hypodermic administration.

Since *only* the specific alkaloids of ergot are responsible for the clinical value of ergot preparations, the exclusion of as much as possible of the remainder of the extractive material can be regarded only as advantageous. Although there seems to be no direct evidence to the effect that the non-specific amines are harmful in oral ergot preparations, it is highly probable that they are at least partly responsible for the transitory gastric disturbances (vomiting, nausea, etc.) occasionally observed following the administration of Fluidextract of Ergot because of the powerful local action of histamine upon the smooth muscle of the stomach. Certainly there is no possibility that the exclusion of non-specific amines would detract from the clinical value of a Fluidextract of Ergot, while it is quite possible that such procedure would at least partially obviate undesirable side actions and provide for a more rapid absorption of the alkaloids.

Entirely aside from clinical aspects, the pronounced pharmaco-dynamic activity of the non-specific amines has been found to be the cause of marked interference in attempts to assay or standardize ergot preparations by many of the currently used bio-assay methods. (See Parts II (38), III (39) and V (42) of this series of articles.) The exclusion of active amines from a preparation obviates this interference.

METHOD FOR THE EXCLUSION OF NON-SPECIFIC AMINES AND REDUCTION OF INERT EXTRACTIVES IN FLUIDEXTRACT OF ERGOT.

This method depends principally upon the complete solubility of the non-specific amines, and the relative insolubility of the specific alkaloids of ergot, in water.

Part IV (41) of this series of articles contained experimental evidence showing that adequate extraction of powdered, de-fatted ergot with water efficiently removed all of the non-specific amines but only insignificant amounts of the specific alkaloids; that the addition of small amounts of acid caused the removal of somewhat greater amounts of the alkaloids in addition to all of the amines; and that by mildly alkalinizing the aqueous menstruum, the amines could be extracted but practically none of the alkaloids appeared in the percolate. These results suggest that preliminary extraction of the de-fatted drug with water or an alkalinized aqueous menstruum could be made to remove the non-specific amines without extracting the specific alkaloids. The amine-free drug could then be subjected to the solvent action of a suitable menstruum for the extraction of the specific alkaloids.

In the examination of hundreds of samples of crude ergot, it was observed that practically all of them possessed a natural low acidity which varied with the different samples. Part of this acidity apparently is entirely independent of that resulting from the development of rancidity in the fixed oil occurring in ergot, since a varying degree of acidity was found to remain in the powdered drug even after being completely de-fatted. This natural acidity causes solution and subsequent loss of part of the active alkaloids when freeing the drug from amines by the preliminary extraction with water. A proper correction of this acidity can be made to effectively obviate the loss of appreciable amounts of alkaloids.

Since alkaloids are usually insoluble in alkalies, it would seem that any one of the commonly used alkalies added to the aqueous menstruum would prevent the loss by extraction of alkaloids. Unfortunately, complications arise which prevent such a simple solution of this problem. The active alkaloids of ergot exhibit amphoteric reactions, *i. e.*, they can be dissolved by the addition of either acids or slightly higher concentrations of alkalies. Therefore, to give the correct amount of a given alkali to be added to the aqueous menstruum for the removal of amines from all lots of ergot without causing a loss of alkaloids would be practically impossible, because the natural acidity of different lots of ergot is an extremely variable factor, making it very difficult to maintain the correct alkalinity of the aqueous menstruum.

This difficulty has been overcome by the use of a series of non-toxic reagents which exhibit neutral or only feebly alkaline reactions *per se*, but which are capable of entirely neutralizing

the natural acidity of ergot and maintaining only a very slight alkalinity in the amine-extracting aqueous menstruum. These reagents include sodium-bicarbonate; magnesium oxide, hydroxide and carbonate; calcium carbonate, etc. The efficiency of aqueous admixtures of these reagents in extracting the non-specific amines and excluding the specific alkaloids from the aqueous percolate has been studied by testing percolates for the presence of alkaloids with the paradimethylaminobenzaldehyde reagent of Van Urk (36), Tanret's test (see Dutch Pharmacopœia) and the nitrobenzaldehyde reagent (see *Analyst*, 1929, page 424). The results of these studies indicated that sodium bicarbonate is the most satisfactory of the alkaline reagents and that proper preliminary percolation of de-fatted ergot with water containing suitable proportions of sodium bicarbonate could be made to completely remove the non-specific amines and much of the inert material without extracting or losing appreciable amounts of the specific alkaloids.

Such strongly alkaline reagents as the carbonates or hydroxides of sodium, potassium and ammonium cannot be used without danger of losing appreciable amounts of the alkaloids because of the fact that either a very slight deficiency or excess of alkali provides for a removal and subsequent loss of alkaloids. Ammonia water was found to be the most satisfactory of this group, but requires very careful control. The use of the mildly alkaline insoluble reagents such as magnesium oxide, etc., is objectionable because the excess of the reagent cannot easily be removed from the drug. The excess causes a partial neutralization of the acid contained in the menstruum ultimately used to extract the alkaloids. This difficulty is not encountered with the use of sodium bicarbonate, since the excess of this reagent can be removed completely by washing the drug with water.

After the removal of the amines (histamine, etc.) and much of the inert material (coloring matter, proteinogenous substances, etc.) by percolation with alkalinized water, the drug can be subjected to percolation with an acid-hydro-alcoholic menstruum such as is used in the preparation of Fluidextract of Ergot, U. S. P. (24). This menstruum has been found to be suitable and efficient for extracting the alkaloids from ergot and in preparing a satisfactory product.

DETAILS OF METHOD FOR PREPARATION OF PURIFIED FLUIDEXTRACT OF ERGOT.

1. De-fatting the Drug.—Completely de-grease or de-fat 1000 grams of coarsely powdered ergot by the method described in the U. S. P., 10th Revision, and expose to a current of air until free from the odor of benzine.

2. The Aqueous Treatment for the Removal of Non-specific Amines and Inert Substances.—Mix the de-fatted drug with a sufficient amount of water containing 5% of sodium bicarbonate to render it evenly and distinctly moist, and to maintain it so during maceration for two to four hours in a tightly-covered container in a cold room. Prepare a glass or glass-lined percolator by placing, at the bottom, first a uniform layer of water-wetted cotton, then a layer of fine washed sand, then a close-fitting filter paper, and another layer of sand. Carefully pack the moistened drug loosely and uniformly on top of the filtering medium in the percolator, and add the sodium bicarbonate aqueous menstruum (5%), constantly maintaining a stratum of liquid above the drug, until the liquid begins to drop from the lower orifice of the percolator. Close the orifice, cover the percolator and allow to macerate for an over-night period (16 to 24 hours) *in a cold room*. Then allow the percolation to proceed at a slow rate, adding a menstruum consisting of pure water as required to maintain a stratum of liquid above the drug. Test portions of the percolate directly from the percolator from time to time for amines by the Isolated Guinea-Pig Uterus Method previously described (38). Continue the percolation with water until the percolate is found to be practically free from active amines. Discard this aqueous percolate. Then allow all of the liquid to drain completely. Carefully remove all but a 1- or 2-inch layer of the drug without disturbing the filtering medium of the percolator, and remove as much of the remaining water as possible by strong expression or centrifugation.

3. Extraction of the Ergot Alkaloids.—Transfer, in portions, the expressed drug to the percolator adding and mixing a sufficient amount of alcohol containing 2% hydrochloric acid U. S. P., after each portion, to render the drug uniformly saturated. When all of the drug has been thus returned to the percolator, add a sufficient amount of the acidified alcohol to maintain a slight stratum of liquid above the drug. Cover the percolator tightly and allow to macerate for 12 to 24 hours, or an over-night period. Then proceed with percolation at a slow rate, using a menstruum composed of 50% alcohol, 48% water and 2% hydrochloric acid, U. S. P. (see

Menstruum No. 1, Fluidextract of Ergot, U. S. P. (24)), until 750 cc. of percolate is obtained. Reserve this portion and continue percolation with diluted alcohol U. S. P. until the drug is exhausted of alkaloids. Concentrate the exhaust percolate at a moderate temperature *in vacuo* to a volume of 250 cc. and incorporate in the reserve portion. All operations must be carried out in a cold room to prevent decomposition of the unstable alkaloids, and to prevent fermentation during the preliminary aqueous extraction (fermentation causes a production of amines (41)). Assay the product biologically (see below) and adjust to the potency of U. S. P. Fluidextract of Ergot.

The finished product is of purplish red color, transparent, of characteristic odor and taste, and may be diluted with water without the development of more than a slight opalescence. It should be stored in amber-colored bottles in a refrigerator. Any sediment which collects on the bottom of containers may be rejected.

THE EFFICIENCY OF THE METHOD.

For the purpose of illustrating the efficiency of the method in excluding non-specific amines, etc., and providing for a preparation containing significant quantities of the active ergot alkaloids, a complete example involving a sample of ergot of predetermined composition is necessary.

Accordingly, a sample of crude ergot was selected which was known to contain a high non-specific amine content, and also a significant quantity of specific alkaloids. A portion of this sample was converted into a fluidextract by the U. S. P. process, and a similar portion was subjected to the process here described for the preparation of a Purified Fluidextract of Ergot. Each preparation was then carefully bio-assayed for non-specific amine content by the Isolated Guinea-Pig Uterus Method previously described (38), and for specific alkaloidal content by the Broom-Clark Isolated Rabbit Uterus Method (28), the results of which are given in Table VI.

TABLE VI.—A COMPARISON OF U. S. P. FLUIDEXTRACT OF ERGOT AND "PURIFIED FLUIDEXTRACT OF ERGOT."

Preparation.	Specific alkaloidal content in terms of ergotamine* base, per cent.	Non-specific amine content in terms of histamine,** per cent.	Total solids (47), per cent.
Fluidextract of Ergot, U. S. P. X	0.085	0.097	10.2
"Purified Fluidextract of Ergot"	0.075	None	2.75

* Ergotamine Tartrate (Sandoz Chemical Co.) containing 84.5% ergotamine base.
** Histamine (Pfanstiehl Chemical Co.).

Table VI is self-explanatory. The freshly prepared U. S. P. Fluidextract contained very appreciable quantities of amines in addition to the alkaloids, while the Purified or De-aminized Fluidextract contained none of the amines, but nearly as much alkaloidal activity as the U. S. P. preparation. A slight loss of alkaloidal activity cannot be avoided because of their lability in the presence of air, and the fact that, even though the alkaloids are not soluble in the alkaline aqueous menstruum, as light colloidal suspension results which causes a washing out and subsequent loss of a small portion of the alkaloids through the filter at the bottom of the percolator during the process of freeing the drug from non-specific amines. By observing a reasonable amount of care in the extraction technique, all traces of important non-specific amines may be removed without a loss of more than 20 per cent of the alkaloidal activity, even in those samples of

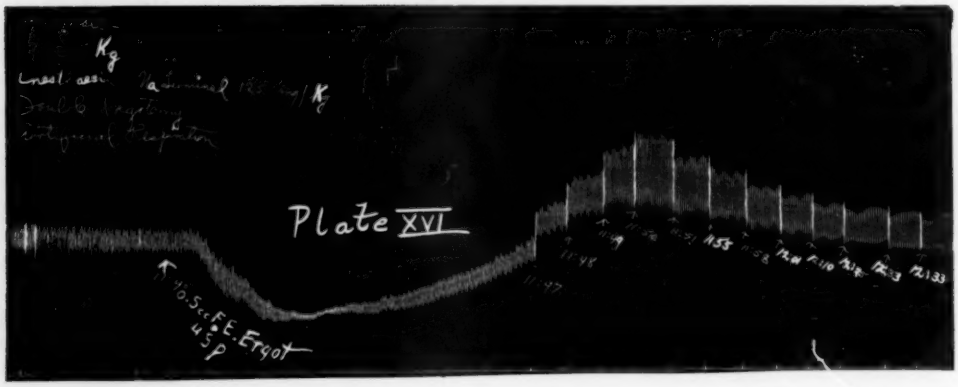

Plate XVI.—Showing the effect upon the carotid blood pressure of a dog produced by the intravenous administration of 0.5 cc. of Fluidextract of Ergot (Table VI), freshly prepared by the process of U. S. P. Note that the initial fall in pressure, presumably due to histamine, is followed by a perceptible rise in pressure, probably due to the alkaloids. Thus, both the non-specific amines and the specific alkaloids are shown to be present in significant amounts in this preparation.

crude ergot bearing an unusually high proportion of non-specific amines. Table VI also shows the relatively low proportion of total solids which appears in the Purified Fluidextract.

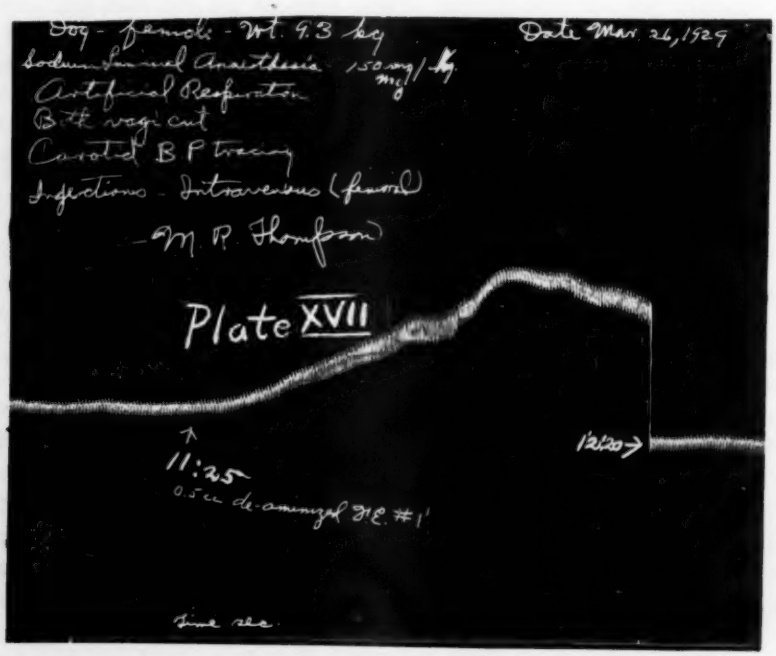

Plate XVII.—The pronounced and persistent rise in carotid blood pressure of a dog produced by the intravenous administration of 0.5 cc. of freshly prepared Purified Fluidextract of Ergot of Table VI. Note the absence of histamine effect. The response to a U. S. P. Fluidextract prepared from the same crude drug is shown in Plate XVI for comparison.

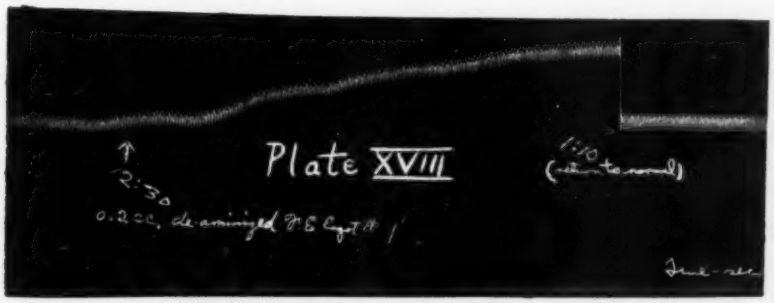

Plate XVIII.—The rise in carotid blood pressure produced by 0.2 cc. of Purified Fluidextract of Table VI. These Purified Fluidextracts produce an effect analogous to that of the pure alkaloid ergotamine exemplified in Plate VIII (41).

PHARMACO-DYNAMIC REACTIONS OF PURIFIED FLUIDEXTRACT OF ERGOT.

The pharmaco-dynamic effects produced by Purified Fluidextract of Ergot have been found to be entirely similar to those of pure solutions of either ergotamine or ergotoxine by the Cock's Comb, Isolated Guinea-Pig or Rabbit Uterus and Pressor Methods.

As set forth in preceding articles (41, 42), studies by the usual Pressor Methods to dogs or cats are especially significant in showing the qualitative nature of ergot preparations because of the marked differences in pressor effect produced by the most important of the non-specific amines, *i. e.*, histamine, and that produced by the specific ergot alkaloids. Therefore, experimental illustrations of pressor effects on anesthetized dogs only are included in this article to show the differences between U. S. P. Fluidextract of Ergot and "Purified or De-aminized Fluidextract of Ergot."

Plate XVI shows the effects produced upon the carotid blood pressure of an anesthetized dog by the intravenous administration of 0.5 cc. of the freshly prepared U. S. P. Fluidextract of Table VI. Note the similarity of this tracing and that of Plate XI of a preceding article (41) in which a mixture of the alkaloid ergotamine and histamine was given.

Plate XVII, in marked contrast to Plate XVI, shows the pressor effect produced in a similar experiment by 0.5 cc. of the "Purified Fluidextract" of Table VI. Note the similarity of this effect with that of pure ergotamine (Plate VIII, Part IV (41)), and the complete absence of histamine effect.

Plate XVIII shows the effect produced by the repetition of a smaller dose (0.2 cc.) of the "Purified Fluidextract" to the same dog as was used in Plate XVII.

Plate XIX illustrates the effect produced by the intravenous administration of the slightly alkaline watery extract from 0.5 gram of the drug entering into the preparation of the "Purified

Plate XIX.—The effect produced upon the carotid blood pressure of a dog by the intravenous administration of an amount of the alkaline aqueous percolate representing 0.5 gram of the crude drug entering into the preparation of Purified Fluidextract of Ergot (Table VI). The effect is comparable in all respects to that produced by pure histamine (see Plate IX, Part IV (41)).

Fluidextract" of Table VI. The effect observed was entirely comparable to that produced by 0.5 mg. of pure histamine.

From these illustrations, it is seen that the U. S. P. Fluidextract owes its pressor activity to the non-specific amines *and* the alkaloids; that the "Purified Fluidextract" owes its activity to the alkaloids *only;* and that the preliminary alkaline aqueous percolation extracted essentially none of the active principles other than the undesirable non-specific amines, the most important of which is histamine.

THE BIOLOGICAL ASSAY AND STANDARDIZATION OF PURIFIED FLUIDEXTRACT OF ERGOT.

Preceding articles of this series (38, 39, 41, 42) bore experimental evidence showing that non-specific amines are frequently present in recently prepared Fluidextracts and Extracts of Ergot in sufficient concentrations to cause serious interference in the assay of these preparations for alkaloidal activity by the currently used bio-assay methods. Since the non-specific amines do not appear in the "Purified Fluidextract" herein described, this interference is not encountered. Therefore, several of the currently used bio-assay methods have been found satisfactory in estimating the alkaloidal activity of this preparation, as follows:

Method.	Accuracy. In terms of U. S. P. X potency.
Cock's Comb Method, U. S. P. X	±20%
Broom-Clark Isolated Rabbit Uterus Method (13)	±10%
Broom-Clark Isolated Rabbit Uterus Method, Modified (28)	±10%
Isolated Guinea-Pig Uterus Method (39)	±20%

THERAPEUTIC INDICATIONS AND USE.

The Purified Fluidextract of Ergot herein described contains approximately 45 to 50 per cent of alcohol in addition to approximately 0.5 to 0.6 per cent hydrochloric acid. It corresponds in physiological potency to Fluidextract of Ergot, U. S. P., and owes its entire activity to the specific alkaloids of ergot, being devoid of active non-specific amines such as histamine or tyramine. Therefore, this preparation is intended to be administered orally, in cases requiring ergot therapy, and in therapeutic dosage identical to that of Fluidextract of Ergot, U. S. P.

(*To be continued*)

TOOTH PASTES AND THEIR COMPOSITION.

Due to the active competition in the dentifrice industry, it "behooves the manufacturer to be sure of his ground and to pay strict attention to the quality of his product." A discussion is given of the substances in tooth paste, *e. g.*, abrasives, sweeteners and flavors, and liquid constituents, and their influence on the finished product. Soap is a valuable part of a good paste; it should be employed in finely powdered form, be made from high grade fats and oils, not contain more than 0.3% free alkali calculated as Na_2CO_3, and have a titer around 40–42° C., etc. The recently advanced claims as to the detoxification properties of sodium ricinoleate to replace germicides in the oral cavity have been shown by Leonard and others to require further verification. The importance of substantiating medicinal claims for tooth paste by actual experimental data is stressed. The U. S. Food, Drug and Insecticide Administration is devoting its attention to these medicinal claims. It has already ruled that no single medicine or combination of medicines known at this time can be regarded as effective as a preventive or cure for pyrorrhea (Riggs disease) or the common symptoms. Colloidal protection of tooth pastes is effected by the use of 0.5–3% gelatin, gums or chicle; 3% of free fatty acids; 5–10% of clays; or 50% of glycerite of starch.—J. P. in *Squibb Abstract Bulletin*, page A 1012.—E. G. Thomssen in *American Perfumer & Essen. Oil Rev.*, 24 (1929), 527.

A NOTE ON THE ACTIONS OF "ERIOCOMINE," A CONSTITUENT OF ERIOCOMA FLORIBUNDA.*

BY M. L. TAINTER, M.D., AND M. A. SEIDENFELD, B.S.

In a recent paper in THIS JOURNAL, G. G. Colin[1] reported on the active constituents and actions of *Eriocoma floribunda*, which is extensively employed by the laity as an abortifacient and is used by physicians, in Mexico. According to Colin, the exact nature of the active constituent, which he has named "eriocomine," is not understood, but apparently it is not an alkaloid. A summary of general actions with reports on clinical cases is given in a thesis by R. Torres.[2] The significant claims of Colin and of Torres for "eriocomine" are as follows: temporary slight anæsthetic action on the tongue, local irritant action on subcutaneous and intramuscular injection but not on oral administration, congestion of viscera and genitalia in animals, abortion in pregnant animals, stimulation of contractions of excised and intact uteri of guinea-pigs, oxytocic action similar to the actions of ergot and pituitary, and a definite usefulness in controlling post-partum hemorrhage. Its use during labor is contraindicated. According to these claims, "eriocomine" would be an unusual uterine hemostatic.

Unfortunately, the data supplied by Colin and Torres are indefinite and inconclusive, but they do suggest a possible indirect and undesirable uterine action. During the routine of other researches, we have taken the opportunity of testing "eriocomine" on the uterus, circulation and blood of animals. The "eriocomine" was supplied by Mr. Colin as a 10 per cent aqueous solution of the supposedly active fraction of eriocoma. A brief summary of the results obtained follows.

CIRCULATION.

Injected intravenously into dogs and cats, "eriocomine" had no effect on blood pressure and pulse rate until very large amounts were given. Doses of 19 and 36 mg. per kilo did nothing, 77 mg. per kilo caused a 23 per cent fall of blood pressure, and 100 mg. per kilo in three cats caused variable effects. This large dose killed one cat by cardiac paralysis, lowered the blood pressure 42 per cent and increased the pulse 20 per cent in another cat, and had no definite effect in still another cat. Since the total oral dose recommended for patients is only 300 mg., our results would indicate that this clinical dose would be insufficient to cause any direct circulatory response even if it were injected directly into the blood stream. This confirms Colin's claim that the drug has little or no effect on the circulation, and shows that it is also unable to stimulate smooth muscle in the blood vessels.

INTESTINE AND UTERUS.

Applied directly to excised strips of rabbit intestine, according to the Magnus technic, a 1 : 10,000 concentration of "eriocomine" did nothing, while 1 : 5000

* From the Department of Pharmacology, Stanford University School of Medicine, San Francisco.

[1] G. G. Colin, JOUR. A. PH. A., 18 (1929), 876.

[2] R. Torres, Estudio sobre la aplicación terapeutica, de la Eriocomina en Ginecologia, Thesis, National Univ. of Mexico (1929), 54.

paralyzed the preparation. The non-pregnant cat uterus was depressed by a concentration of 1 : 3333 and gave no response with lower concentrations. The non-pregnant guinea-pig uterus was not stimulated, no definite response being obtained with the maximum concentration (1 : 2500) tried. With the pregnant guinea-pig uterus, the results were still more disappointing; no stimulation was observed with concentrations ranging from 1 : 10,000 to 1 : 500. When the uterine movements of cats were recorded *in situ*, using Jackson's method, doses of 19, 77 and 100 mg. per kilo intravenously failed to elicit contractions of the uterus, although good contractions in the same animals were obtained after injections of epinephrine, ergot and pituitary extract. From these results it is concluded that "eriocomine" had no direct stimulant action on excised intestinal and uterine muscles and on the uterus *in situ*, even with the highest tolerated dosage. Therefore, we were unable to confirm the claim that "eriocomine" is a uterine stimulant comparable to ergot and pituitary.

GENERAL PROPERTIES AND EFFECTS ON BLOOD.

A striking feature of the claims was that "eriocomine" caused marked gastro-intestinal irritation, and even hemorrhagic enteritis. It also caused marked irritation when injected locally. The irritation after oral administration would result in engorgement and hyperemia of the entire abdominal region, including the uterus, and thus cause uterine stimulation and abortion. Such an indirect action would explain why the uterus of cats was not stimulated *in situ* when the drug was injected intravenously. This mecha[illegible]of action would be in keeping with that of other irritants, such as cantharides [illegible] the various ecbolic volatile oils. Due to limitation of material, we were unable to make life tests for the irritant action of "eriocomine," but certain tests were made *in vitro*.

Colorimetric estimations of acidity in the 10 per cent solution showed a p_H of 6.9 to 7.0, *i. e.*, neutrality. The product was non-irritating to the tongue. A test for the presence of saponins was made by adding sodium chloride in isotonic concentration (0.9 per cent) to "eriocomine," and incubating this mixture with washed rabbits' red blood cells. However, 24 hours' incubation of the red cells in concentrations of "eriocomine" ranging from 0.025 to 5.0 per cent failed to cause detectable hemolysis. There was some darkening and agglutination of the red cells which might be accounted for by the colloidal nature of the material. In a parallel series, concentrations of pure saponin as low as 0.0001 per cent hemolyzed the cells within 1 hour. The conclusion would seem to be justified that the irritant constituent of "eriocomine" is not free saponin, acid or alkali.

CONCLUSIONS.

1. "Eriocomine," a constituent of *Eriocoma floribunda*, when injected intravenously in animals, was found to have no action on blood pressure and pulse rate, except in toxic and fatal doses.

2. No direct smooth muscle stimulation was demonstrated with "eriocomine," even in maximum doses, on the excised intestine and pregnant and non-pregnant uterus, and on the non-pregnant uterus *in situ*.

3. "Eriocomine" possessed a neutral reaction, was non-irritating to the tongue, and did not hemolyze red blood cells, indicating absence of saponin.

4. "Eriocomine" lacks the properties which would justify regarding it as a possible oxytocic and uterine hemostatic comparable to ergot and pituitary, but it may act as an irritant ecbolic.

COMPARATIVE MARRUBIIN CONTENT IN MARRUBIUM VULGARE FROM EUROPEAN *VS.* AMERICAN SEED.

BY ADELIA MCCREA.*

Marrubium vulgare L., the perennial white horehound, is a common garden plant. While it is frequently used as a potherb and for flavoring, it is also of some interest medicinally. This is probably due to its glucoside content, the crystalline principle marrubiin; and it was in regard to this property that the tests herein described were made.

It has been considered that, in its characteristic physiological activity, European marrubium was better than American plants which were stated to be without marrubiin. Since it is the same species, botanically, ours having been naturalized from Europe, so marked a difference was difficult to explain; hence an experiment was designed to give further comparative data.

For this, seed was obtained from three sources: France, Germany and American-grown (Michigan). A light, slightly acid, sandy soil was chosen, as the plant seems to prefer such a type; and the seed lots were planted in adjacent beds. The French seed germinated first, the American, and lastly the German; but at harvest time all beds were closely approximate in growth, and no distinction was visible in herbage or bloom.

As marrubium belongs to the *Labiatæ*, it was considered probable that maximum yields would be obtained from flowering plants, as is true of other mints. All were therefore cut while in bloom, using the flowering parts, with a minimum of stems. They were carefully dried at a moderate temperature, about 40° C., until brittle; then ground to a fine powder and processed for the glucoside.[1] All were found to be practically identical in physical appearance and melting points, as shown in the tabulation below; but there is considerable variation in the amount of marrubiin present.

RELATIVE MARUBIIN VALUES.

Seed source.	Per cent of marrubiin.	Melting point.	Remarks.
French	0.34%	156–159° C.	Readily freed from waxes
German	1.00%	156–158.5° C.	Readily freed from waxes
American	0.47%	156–158° C.	Separated with difficulty.

It is interesting to note that all three samples possess a good content of the characteristic glucoside, the French running lowest of the three instead of highest as had been expected. It is therefore concluded that the reported lack of marrubiin in American marrubium has been due to faulty methods of culture, to failure in separating the waxes, or to both of these factors. Certainly, it is present in plants grown and harvested under proper conditions.

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* Research Department, Parke, Davis and Company.

[1] Chemical extraction and testing were done by W. F. Kamm of this Laboratory.

*AQUA HAMAMELIDIS N. F.—HAMAMELIS WATER, WITCH HAZEL WATER, DISTILLED EXTRACT OF WITCH HAZEL.

BY S. L. HILTON.

"The subject I wish to discuss is one that enters into the daily sales of the pharmacist; he is constantly called upon by the laity for it—Witch Hazel.

"What is Witch Hazel?—The National Formulary says Hamamelis Water is clear and colorless, having a characteristic odor and taste. It is neutral, or only faintly acid to litmus.

"It is made by the distillation of witch hazel twigs gathered in the fall of the year, macerated in water and distilled; 150 cc. of ethyl alcohol are added to 850 cc. of distillate.

"Little is known or has been determined about its constituents; it seems, however, to have some medicinal value, although there are some that contend it has no value; thousands of gallons are made and consumed every year.

"The U. S. P. VIII, gave a process for its manufacture and required that each 850 cc. of distillate should contain the volatile products of 1000 Gm. of witch hazel twigs, to which was added 150 cc. ethyl alcohol.

"The U. S. P. IX, provided that it should be a saturated aqueous liquid obtained by distilling with steam or water the bark, twigs, smaller stems or the entire shrub collected in autumn; no definite amount of witch hazel was designated, but it required that 150 cc. of alcohol should be added to 850 cc. of distillate.

"The U. S. P. X, dropped Aqua Hamamelidis and it was then included in N. F. V. This standard provides that 1000 Gm. be used to obtain 850 cc. of distillate to which is to be added 150 cc. of alcohol. The description and tests for purity are the same as was contained in U. S. P. IX.

"I was the chairman of the N. F. sub-committee to which this preparation was referred. I found one manufacturer who desired that the amount of twigs to be used should be doubled. I endeavored to have the strength increased accordingly. but was overruled by the committee. I had nothing to do with providing tests for purity; after the N. F. V was published my attention was called to the test as given, and that the test for formaldehyde was not satisfactory; this seemed to be true from the results obtained by a firm of chemists in New York and led me to conduct an investigation.

"Late in the fall of 1928, after distillation was started, a leading manufacturer submitted to me for investigation six samples—first run without alcohol, first run with 15% alcohol added; middle run without alcohol, middle run with 15% alcohol; last run without alcohol and last run with 15% alcohol added—these I have carefully examined, together with two other brands on the market, and I have found some interesting data, all of which have been tabulated in this paper.

"The alcoholic content of all of the samples show very close results: Sample 1, 18.58% by volume at 20° C.; Sample 2, 18.58% by volume; Sample 3, 18.43%; these samples were obtained in the open market and contained pure ethyl alcohol."

N. F. V Test for Formaldehyde.—Add 8 drops of an aqueous solution of resorcinol (1 in 200) to 5 cc. Hamamelis Water and carefully superimpose this upon 5 cc. sulphuric acid, contained in a test-tube. After standing for three minutes a rose-red

* An address before Baltimore Branch A. PH. A., February 25, 1930.

ring does not appear at the line of contact of the liquids, nor does a distinct white layer appear above this zone.

Samples.	A.	B.	C.	D.	E.	F.	Control, 0.5% formaldehyde.
Sp. gr. 25° C.	0.99492	0.97384	0.99500	0.97384	0.99506	0.97366	
N. F. test for Formald.	Slight rose, milky	Slight rose, milky	Slight rose	Slight rose	Slight rose	Slight rose	Deep rose milky
After 15 hrs.	Deep, milky	Deep, milky	Deep, slight milky	Slight rose-red	Deep, slight milky	Deep slight milky	Very deep rose, milky
Silver nitr. and ammon.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Acidity NaOH *N*/10	3.6 cc.	2.8 cc.	3.2 cc.	2.2 cc.	6.2 cc.	5.0 cc.	....
METHODS OF A. O. A. C.							
Heebner's test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Leach test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Phenylhydraz. HCl	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Phenylhydraz. and nitroprus	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Phenylhydraz. and ferricyan.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Phenylhydraz. and $FeCl_3$	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Phlorglucinol	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Schiff's test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
Morphine sulphate	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Positive
100 cc. evap. to 10 cc. with ammon.	Trace	Neg.	Trace	Neg.	Trace	Neg.	Positive

SAME SAMPLES AS FORMER TABLE 150 CC. DISTILLED, RECOVERING 100 CC.

	A.	B.	C.	D.	E.	F.	Control, 0.5% formal.	Control, 15% alcohol.
N. F. test	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Neg.
After 15 hrs.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Pos.	Neg.
Heebner's test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Phenylhydraz. HCl	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Phenylhydraz. and nitroprus.	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Phenylhydraz. and $FeCl_3$	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Phenylhydraz. and ferricyan	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Phlorglucinol	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Schiff's test	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
Morphine sulphate	Neg.	Neg.	Neg.	Neg.	Neg.	Neg.	Pos.	Neg.
100 cc. evap. to 10 cc. with ammon.	Trace	Neg.	Trace	Neg.	Trace	Neg.	Pos.	Neg.
After 15 minutes	Trace	Trace	Trace	Trace	Trace		Pos.	Neg.

It has been shown that hammelin-tannin is present in witch hazel and is converted into Gallic Acid by hydrolysis, "National Dispensatory."

Richter's Chemistry speaks of pinene and pinol; it is quite clear that witch hazel contains traces of one or the other and that these substances do not react with phenylhydrazine hydrochloride.

Weak solutions of those substances were used as controls comparing same with the middle run containing 15% alcohol, also control of 0.5% formaldehyde solution and testing for gallic acid.

Sample.	Middle run with alcohol.	Pine from Oil *Pinus p.*	Pinene from oil turp.	Gallic acid.	Control, 0.5% formaldehyde.
N. F. test	Pos.	Pos.	Pos.	Slight milkiness	Pos.
After 15 hours	Pos.	Pos.	Pos.	Slight milkiness	Pos.
Heebner's test	Neg.	Slight red	Brownish yellow	Reddish brown	Pos.
Leach test	Neg.	Slight red	Brownish yellow	Reddish brown	Pos.
Phenylhydrazin	Neg.	Slight red	Brownish yellow	Reddish brown	Pos.
Phenylhyd. and nitroprus.	Neg.	Slight red	Brownish yellow	Reddish brown	Pos.
Phenylhyd. and $FeCl_3$	Neg.	Slight red	Brownish yellow	Characteristic iron reaction	Pos.
Phenylhyd. and ferricyan	Neg.	Slightly red	Slightly red	Deep red	Pos.
Phlorglucinol	Neg.	Negative	Negative	Slight brown	Pos.
Schiff's test	Neg.	Negative	Negative	Slight brown	Pos.

SAMPLES BOUGHT ON MARKET, NOS. 1, 2 AND 3.

	No. 1.	No. 2.	No. 3.		
Sp. gr. 25° C.	0.97384	0.97782	0.97628	Control 15% alcohol	Formaldehyde 0.5% sol.
N. F. test	Pos. milky layer	Pos. milky layer	Pos. milky layer	Neg.	Pos.
After 15 hrs.	Deeper color	Heavy reaction	Heavy reaction	Neg.	Pos.
Silver nit. test	Neg.	Neg.	Neg.	Neg.	Pos.
Acidity NaOH *N*/10	3.2 cc.	1 cc.	5 cc.		
Heebner's test	Neg.	Neg.	Neg.	Neg.	Pos.
Leach test	Neg.	Neg.	Neg.	Neg.	Pos.
Phenylhyd. HCl	Neg.	Slight	Neg.	Neg.	Pos.
Phenylhyd. and nitroprus.	Neg.	Neg.	Neg.	Neg.	Pos.
Phenylhyd. and ferricy.	Neg.	Neg.	Neg.	Neg.	Pos.
Phenylhyd. and $FeCl_3$	Neg.	Neg.	Pos.	Neg.	Pos.
Phlorglucinol	Neg.	Neg.	Neg.	Neg.	Pos.
Schiff's test	Neg.	Neg.	Neg.	Neg.	Pos.
Morphine test	Neg.	Neg.	Neg.	Neg.	Pos.
100 cc. evaporated to 10 cc. with ammon.	Neg.	Trace	Pos.	Neg.	Pos.

CONCLUSIONS.

"From the research I have conducted I am convinced that the test for formaldehyde as given in the National Formulary V, is not satisfactory, as it gives a decided reaction for pinene, a normal constituent of witch hazel, and will be mistaken for formaldehyde. None of the samples shows formaldehyde by the tests as given in the methods of analysis of the Association of Official Agricultural Chemists.

"This paper is offered to the new Committee of Revision of the N. F. VI, for thorough study and I recommend that the test for formaldehyde be changed to one

or more of the tests of the Association of Official Agricultural Chemists, as the present test gives an unfair reaction.

Samples A Dickinson's first run without alcohol
B Dickinson's first run with 15% alcohol
C Dickinson's middle run
D Dickinson's middle run with 15% alcohol
E Dickinson's last run
F Dickinson's last run with 15% alcohol

Other samples, open market: No. 1, Dickinson's; 2, Humphrey's; 3, Ponds. No other samples were available on the market in Washington.

A STUDY OF THE EMODIN-BEARING GROUP OF CATHARTICS. PART I.

BY PETER VALAER, JR.

For the past twenty years the writer has been interested and fascinated by what is regarded by many to be the most baffling group of crude drugs. The principal members of this group are cascara, rhubarb, frangula, aloes and senna. They are known to many as emodin-bearing drugs, whose cathartic action depends perhaps upon certain oxymethyl-anthraquinones for their activity. The word "perhaps" is projected into this paragraph for reason that there are eminent members of the pharmaceutical chemical profession who do not share this opinion. Their reasons will be discussed later along with certain chemical data.

The writer has planned to divide the "Study of the Emodin-Bearing Group" into five parts discussing each group member separately. Cascara is the best known and most widely used of this group.

There has been developed in the chemical laboratory of the Bureau of Prohibition a method by which the presence of emodin-bearing drugs are detected and estimated. It is based on the Bornträger reaction (*Z. anal. Chem.*, 19 (1880), 165). When the group of drugs whose virtues depend principally upon the resinous hydroxyanthraquinone bodies and other anthraquinone compounds in the solution are made acid and are extracted with ether and the ether extract made strongly alkaline with ammonia, a red color of a certain shade is caused to develop. Application is made of this test as a basis for the quantitative estimation of, for instance, cascara in medicinal preparations under examination. Under certain carefully observed conditions the depth of color extracted by the ether and the color developed on the treatment with ammonia varies almost directly in proportion to the amount of cascara or other emodin-bearing drugs present.

Twenty-five cc. of the medicine is measured with a pipette into a 250-cc. separatory funnel, 2 cc. $N/10$ acid introduced to make the material acid, 50 cc. of sulphuric ether is then added and the funnel shaken for exactly five minutes. The material is allowed to settle, the acid liquid is then drawn off; the funnel shaken and allowed to stand and the process of shaking and drawing off repeated until all the aqueous liquid remaining in the funnel is completely stripped out. If any emodin-bearing drugs are present, the upper layer is yellow; rhubarb causing the deepest shade, and aloes the smallest amount of color from a given amount of material. (See a future paper concerning emodin drugs other than cascara.)

The Lovibond's tintometer is depended upon to standardize the colors developed for these comparisons. A brief description of the apparatus is as follows:

The Lovibond tintometer used in these experiments is sold by Eimer and Amend, and is an instrument by which the depth of color of liquids can be accurately measured in degrees, placed in their position in a permanent color scale and registered for reproduction at any time. It consists of a graded series of standards made of colored glasses, numbered according to their depth of color and an instrument for holding the glasses and the object to be measured.

The yellow ether extract is poured into the $^1/_{16}$-inch cell and the color matched against the yellow slides. 10 cc. of the above extract is introduced into a 100-cc. Nessler tube and 10 cc. of strong ammonia (sp. gr. 0.90) added. The mixture is shaken and allowed to stand ten minutes. It is then diluted to 50 cc. volume and mixed. As soon as the ether portion rises to the top it is flicked off and some of the red liquid poured into the $^1/_8$-inch cell of the tintometer and carefully matched against the red tinted slides as in the manner before described.

The yellow extract and the emodin red produced vary almost directly with amount of cascara present and bear a simple ratio to each other. If the yellow ether extract reads 2 in $^1/_{16}$-inch cell, the red developed reads 1.0 in $^1/_8$-inch cell.

Twenty U. S. P. fluidextracts were obtained from the open market and from some of the leading drug houses of the United States, and two U. S. P. fluidextracts were made in this laboratory from standard ground cascara. These fluidextracts were used in the manufacture of preparations containing 15 minims of the extract to each fluidounce, using in some instances wine and in others diluted alcohol as the base. This being the average cascara content of laxative tonics. 25 cc. of this material was treated as before described.

	Color (yellow) $^1/_{16}$" cell.	Color (red) $^1/_8$" cell.
Highest reading	3.2	1.6
Lowest reading	2.0	1.0

Preparations containing 30 minims to the ounce read approximately twice as much of both yellow and red, and preparations containing $7^1/_2$ minims to the ounce, one-half as much.

The yellow color extracted by the ether and the red color developed by the addition of ammonia is reasonably permanent if kept stoppered. Portions of these colored extracts have been used as exhibits in revocation and other hearings, holding their character apparently without change for several days. The yellow color extracted from cascara can be faithfully reproduced with potassium chromate in aqueous solution. The red alkaline solution is more difficult to imitate.

The readings made on the 22 U. S. P. fluidextracts of cascara referred to were made several years ago, and the color readings of each extract will not be gone into, except mentioning the highest and lowest readings, all the extracts falling between these.

Since January 1929 there have accumulated in the laboratory other samples made by some large manufacturing drug houses, and some made by smaller concerns, some of these extracts were furnished directly by manufacturers and some samples were purchased in the open market. All samples were unbroken packages. Besides the method already outlined there was used another method called for convenience the "hydrolysis method." Both methods are now employed in judging the amount of cascara or other emodin-bearing drugs that are present, the only difference between the two methods is that a 25-cc. portion of the preparation under examination being digested with 2 cc. concentrated sulphuric acid.

EXAMINATION OF FLUIDEXTRACTS OF CASCARA U. S. P.

Solids, ash and alcohol were determined on undiluted fluidextracts—the color readings were made in accordance with the method below, using preparations consisting of 25% alcohol and containing in each fluidounce 15 minims of fluidextract.

Method for Color Reading.—Extract 25 cc. of the preparation, made acid with 2 cc. $N/10$ H_2SO_4, extract with 50 cc. of ordinary sulphuric ether in separatory funnel—draw off aqueous liquor several times as it settles and take 10 cc. of the yellow ether extract and 10 cc. of strong ammonia and place in a colorimetric tube (Nessler), mix; allow to stand until some of the remainder of the yellow ether extract is read in $^1/_{16}$-inch cell, then make the mixture in the Nessler tube up to 50 cc. volume with water. Flick off the ether which rises to the top and read the red color in a $^1/_8$-inch cell.

TABLE I.

READINGS OF FLUIDEXTRACTS OF VARIOUS MANUFACTURERS.

Fluidextract of Cascara Sagrada.	Solids.	Ash.	Alcohol.	Color readings. See method below.	Date.
No. 1	23.82	1.510	24.8	Yellow $^1/_{16}$" cell 1.0 Red $^1/_8$" cell 0.6	5–1–29
No. 2	31.102	1.328	23.2	Yellow $^1/_{16}$" cell 2.5 Red $^1/_8$" cell 1.3	5–1–29
No. 3	28.022	1.022	23.8	Yellow $^1/_{16}$" cell 1.6 Red $^1/_8$" cell 0.86	5–1–29
No. 4	24.546	0.974	21.9	Yellow $^1/_{16}$" cell 1.4 Red $^1/_8$" cell 0.7	5–1–29
No. 5	25.242	0.958	23.1	Yellow $^1/_{16}$" cell 1.5 Red $^1/_8$" cell 0.8	5–1–29
No. 6	19.122	0.970	22.2	Yellow $^1/_{16}$" cell 1.0 Red $^1/_8$" cell 0.52	5–1–29
No. 7	28.16	0.920	22.4	Yellow $^1/_{16}$" cell 1.2 Red $^1/_8$" cell 0.68	5–4–29
No. 8	26.070	1.226	18.8	Yellow $^1/_{16}$" cell 1.9 Red $^1/_8$" cell 1.0	5–1–29
No. 9	25.674	1.098	25.3	Yellow $^1/_{16}$" cell 1.6 Red $^1/_8$" cell 0.88	5–1–29

THE EXAMINATION OF U. S. P. FLUIDEXTRACTS OF CASCARA (BY THE HYDROLYSIS METHOD) I. E., DIGESTING WITH SULPHURIC ACID.

Preparations were made with U. S. P. Fluidextracts of Cascara. Each preparation contained in each fluidounce 15 mimims of fluidextract; 25 cc. of each preparation was treated in an Erlenmeyer flask with 2 cc. of concentrated sulphuric acid, shaken thoroughly and allowed to stand over night; refluxed over a steam-bath for 30 minutes using a tube condenser. The material was transferred to a separatory funnel, shaken with 50 cc. of ordinary ether for exactly 5 minutes, allowed to settle; the aqueous layer was drawn off, shaken and again allowed to settle. The remaining aqueous material was again drawn off. This process was repeated until all the aqueous liquor was stripped out as completely as possible.

Unlike the method for the color readings for free emodin, there is a tendency for material to stick on the inside of the separatory funnel. The yellow extract can be separated from this last material by transferring into another separatory funnel. Keep all ether extracts stoppered up as completely as possible as the yellow color becomes concentrated on evaporation.

Take 10 cc. of the yellow ether extract and 10 cc. of strong ammonia and place in a colorimetric tube (Nessler); mix, allow to stand until some of the remainder of the yellow color is read in

1/16-inch cell, then make the mixture in the Nessler tube up to 50 cc. volume with water, allow to settle, flick off the ether which rises to the top and read the red color in 1/8-inch cell.

Readings Made May 27 to 29, 1929, Inclusive—All Materials Are New Fluidextracts.—After 1-hour standing very little change in color took place. The examination of the readings for cascara show that usually when the free emodin is low it is balanced by a corresponding larger combined emodin reading. The readings for the total emodin are several times that of the free emodin. Apparently, some of the fluidextracts are of an inferior character giving poor combined and free emodin readings.

The red readings in the 1/8-inch cell are not pure red but a rose shade making it necessary to use a weak yellow slide with the red slide to get the exact comparison.

TABLE II.

SHOWING COLOR READINGS DUE TO FREE AND COMBINED EMODIN AFTER DIGESTION WITH SULPHURIC ACID—(SEE METHOD ABOVE).

Fluidextract Cascara.	Yellow in 1/16" cell.	Red in 1/8" cell.
No. 1	8.6	5.5 red, 0.5 yellow
No. 2	6.8	4.4 red, 0.6 yellow
No. 3	5.6	4.0 red, 0.9 yellow
No. 4	6.4	5.0 red, 0.8 yellow
No. 5	6.0	4.5 red, 0.7 yellow
No. 6	3.6	2.0 red, 0.5 yellow
No. 7	2.0	2.0 red, 1.3 yellow
No. 8	4.6	3.5 red, 1.5 yellow
No. 9	2.1	1.9 red, 1.2 yellow

EXAMINATION OF SAMPLES OF U. S. P. FLUIDEXTRACT CASCARA AND AROMATIC FLUIDEXTRACT OF CASCARA.

Solids, alcohol and ash were determined on the undiluted fluidextracts using A. O. A. C. methods. The color readings were made on preparations containing 15 minims per fluidounce of fluidextract cascara and 30 minims per fluidounce of aromatic cascara in diluted alcohol (25%) alcohol approximately.

Method for Color Readings—before Hydrolysis (Free Emodin).—Extract 25 cc. of the preparation, made acid with 2 cc. $N/10$ H_2SO_4; extract 5 minutes with 50 cc. of ordinary sulphuric ether in separatory funnel; draw off the aqueous liquor several times as it settles and take 10 cc. of the yellow ether extract and 10 cc. of strong ammonia and place in a colorimetric tube (Nessler); mix, allow to stand until some of the remainder of the yellow ether extract is read in 1/16-inch cell, then make the mixture in the Nessler tube up to 50 cc. volume with water. Flick off the ether which rises to the top and read the red color in a 1/8-inch cell.

Method for Color Readings—after Hydrolysis (Total Emodin).—The cascara preparation contained in each fluidounce 15 mimims of fluidextract and 30 minims per fluidounce of aromatic cascara. Twenty-five cc. of each preparation was treated in an Erlenmeyer flask with 2 cc. of concentrated sulphuric acid, shaken thoroughly and allowed to stand over night; refluxed over a steam-bath for 30 minutes, using a tube condenser. The material was transferred into a separatory funnel, shaken with 50 cc. of ordinary ether for exactly 5 minutes, allowed to settle; the aqueous layer shaken and again allowed to settle. The remaining aqueous material was again drawn off. This process is to be repeated until all the aqueous liquor is stripped out as completely as possible.

Take 10 cc. of the yellow ether extract and 10 cc. of strong ammonia and place in a colorimetric tube (Nessler) mix, allow to stand until some of the remainder of the yellow color is read in 1/16-inch cell, then make the mixture in the Nessler tube up to 50 cc. volume with water, allow to settle, flick off the ether which rises to the top and read the red color in 1/8-inch cell.

TABLE III.

Lab. no.	Substance and manufacture.	Alcohol.	Solids.	Ash.	Free emodin. 1/16".	Free emodin. 1/8".	Total emodin. 1/16". Digested with 2 cc. conc. H_2SO_4.	Total emodin. 1/8". Digested with 2 cc. conc. H_2SO_4.
73225	Aromatic Cascara 30 minims to ounce. Control 9E1006	9.7%	56.6	3.7	1.8 Y	1.0 R 0.4 Y	3.0 Y	1.7 R 1.9 Y
73226	Cascara 15 minims to ounce. Control 8L2484	21.36%	27.1	1.3	2.1 Y	1.9 R 1.0 Y	3.2 Y	2.4 R 1.8 Y
72052	Cascara 30093 × 832634	20.0	25	1.2	1.1 Y	0.6 R	4.9 Y	3.0 R 2.0 Y
72053	Cascara 7065 × 833034	22.8	26	1.3	1.1 Y	0.6 R	4.6 Y	3.0 R 2.1 Y

After 24 hours and 48 hours standing there seemed to be no change in color; the aromatic cascara and the bitter cascara gave the same yellow and red readings as before. This is very convenient in busy laboratories subject to frequent interruptions. The Nessler tubes left standing are always stoppered securely.

Examination of preparations containing Fluidextract of Cascara U. S. P. 15 minims per fluid-ounce (alcoholic content approximately 25%).

To determine whether it is necessary to evaporate the alcohol from the preparation in making the color readings indicating the presence of emodin-bearing drugs.

Columns 1 and 2 of the following table indicate the readings obtained by the following method:

Method for Color Readings.—Extract 25 cc. of the preparation, made acid with 2 cc. *N*/10 H_2SO_4, extract with 50 cc. of ordinary sulphuric ether in a separatory funnel; draw off the aqueous liquor several times as it settles and take 10 cc. of the yellow ether extract and 10 cc. of strong ammonia and place in a colorimetric tube (Nessler); mix, allow to stand until some of the remainder of the yellow ether extract is read in 1/16-inch cell, then make the mixture in the Nessler tube up to 50 cc. volume with water. Flick off the ether which rises to the top and read the red color in a 1/8-inch cell.

Columns 3 and 4 of the table, are results of the same method except that 25 cc. of the preparation is evaporated almost to dryness, taken up with approximately 25 cc. of water and the process carried on as described above.

TABLE IV.

Material. Fluidextract Cascara.	No. 1 yellow. 1/16" cell.	No. 2 red. 1/8" cell.	No. 3 yellow. 1/16" cell.	No. 4 red. 1/8" cell.
No. 1	0.8	0.3	0.8	0.4
No. 2	2.5	1.4 red 0.8 yellow	2.2	1.4 red 0.5 yellow
No. 3	2.4	1.2 red 0.4 yellow	2.2	1.2 red 0.3 yellow
No. 4	1.9	0.8 red 0.3 yellow	1.7	1.0 red 0.3 yellow
No. 5	1.9	0.9 red 0.3 yellow	1.7	1.0 red 0.3 yellow
No. 6	1.1	0.5 red 0.2 yellow	1.1	0.6 red 0.2 yellow

From the results shown there is little to choose from the two methods. Not having to evaporate off the alcohol makes the process more simple and quicker.

The following method was suggested by H. C. Fuller (1) for the assay of cascara and submitted by him to the A. O. A. C. This method is used in the author's

laboratory, it is applied on the ground bark (5 Gm.), the fluidextract (5 cc.) and on medicinal preparations (50 cc.), containing cascara as an ingredient.

Introduce 5 Gm. of the powdered drug into an Erlenmeyer of 500 cc. capacity; add 200 cc. of chloroform and 50 cc. of 25% sulphuric acid; attach to a reflux container (water cooled) using cork stopper covered with tin foil. Apply low heat of Bunsen flame and allow the chloroform to boil for two and one-half hours. At the end of that time allow to cool and then transfer to separatory funnel, washing out flask with a little fresh chloroform.

Draw off the chloroform solution into another separatory funnel. Add 50 cc. chloroform to the acid mixture, agitate and after separation has taken place, run chloroform into that previously collected. Repeat procedure three times. Discard the acid mixture.

Collect the chloroform shake-outs in a Erlenmeyer or distilling flask, recover about $^2/_3$ of the solvent by distillation and pour the balance into a separatory funnel washing thoroughly to remove final traces of anthraquinones; agitate the chloroform with 25 cc. of 10% sodium hydroxide; draw off chloroform and subject to another treatment with 10% sodium hydroxide. Repeat again; draw off chloroform and wash with 25 cc. of water three times.

Unite the alkaline solutions and washings, add the excess of hydrochloric acid and shake out five times with chloroform. Discard the acid and wash the chloroform solution by shaking with 50 cc. of water; let settle completely, filter chloroform through cotton in stem of funnel into a distilling flask or Erlenmeyer and recover a portion of the solvent. Then pour the balance into a tared dish, washing out distilling flask with chloroform; evaporate the solvent; dry at not over 100° for thirty minutes, cool in desiccator and weigh. The weight represents the total anthraquinone bodies in the drug. Preserve the residue for the method described below.

COLORIMETRIC DETERMINATION.

Treat the residue of anthraquinone derivative obtained by the gravimetric assay described above with 10 cc. of 10% potassium hydroxide, wash into a 100-cc. graduated flask with distilled water and make up to volume. Ten cc. of this solution is then diluted with water to 50 cc., a portion introduced into a one-eighth-inch cell of a Lovibond tintometer and matched against the red slides. Note depth of color and report degrees observed.

Transfer 20 cc. of the alkaline liquid by means of pipette to a separatory funnel, add an excess of hydrochloric acid and extract with 25- and 15-cc. portions of ether. Collect the ether solution in a 50-cc. graduated flask and make up to volume with ether. Introduce a portion of this ether solution into a $^1/_{16}$-inch cell of a Lovibond tintometer; match against the yellow slides, note depth of color and report degrees observed.

The table below shows four independent analyses using the above method on the same samples of standard ground cascara bark.

Observer.	Grams of residue in 5 Gm. material.	Ether extract $^1/_{16}$" cell.	Emodin reaction red $^1/_8$" cell.
J. D. McIntyre	0.2288	Yellow 9.8	Red 4.25
		Red 0.4	Yellow 0.54
G. Edmonds	0.2478	Yellow 10.0	Red 4.52
		Red 0.5	Yellow 1.0
Peter Valaer, Jr.	0.2735	Yellow 11.5	Red 4.5
		Red 0.5	Yellow 0.54
Bradshaw (heated $^1/_2$ hr.—30 min.)	0.221	Yellow 9.8	Red 4.52
		Red 0.9	Yellow 1.00

In reading the red in the $^1/_8$-inch cell often there is a slight "off shade" which is usually connected by a low tint yellow slide—rarely more than $^1/_{10}$ that of the red. The Cascara Evacuant was not averaged in the list of fluidextracts.

A qualitative analysis was made to determine the inorganic constituents in the ash obtained from several fluidextracts.

TABLES SHOWING FLUIDEXTRACT ANALYZED BY ABOVE METHOD—USING 5 CC. FOR THE DETERMINATION.

Manufacturer.	% residue.	Color (red) 1/8" cell.	Yellow 1/16" cell.
1	1.019	2.4	1.9
	0.936	2.3	2.2
2	1.382	5.24	3.8
	1.407	6.00	4.8
3	1.016	3.0	2.5
4	1.694	5.0	4.0
5	2.030	4.0	3.0
6	1.81	5.87	5.2
7	1.69	3.6	2.7
8	0.38	Trace red	0.4 yellow
9	0.942	2.8	2.4
10	1.314	5.8	5.6
11	1.11	2.9	2.2
	1.11	2.9	2.2
12	1.54	2.5	2.5
13	1.81	2.9	2.7
14	2.09	4.0	3.7
Average	1.43	3.8	3.2

The analysis disclosed no unusual heavy metals in the ash with the exception perhaps of the presence of manganese. This metal was found in all our specimens of cascara. The other metals found in the ash or cascara were magnesium, iron, calcium, sodium and potassium. The per cent of iron was very small and the ash of cascara was not nearly so rich in iron oxide as was the case with the ash of aloes; reading in the latter case was as high as 40% of Fe_2O_3 in the ash.

Advantage is taken in this method of the ever-present manganese in cascara as a basis for its isolation and ultimate determination.

Determination of manganese in preparation and the per cent in the ash.

Fifty cc. of the solution is evaporated to dryness and ashed; (use ash for above solids and ash determination) dissolve in 15 cc. of 25% nitric acid, transfer into a Nessler tube; wash the dish with 10 cc. water; add washings; add 10 cc. approximately $N/10$ $AgNO_3$ and 0.5 Gm. of ammonium persulphate; warm in a live steam-bath 30 seconds; cool, make up to 100 cc. volume.—Compare with standards made by diluting 1 cc., 0.5 cc., 0.25 cc. and 0.125 cc. of one-hundredth normal potassium permanganate, treating the $N/100$ $KMnO_4$, with all the reagents above and oxidized in the manner above described. The manganese in preparations containing 15 minims the fluidextract of Cascara in each ounce of diluted alcohol will range in per cent of manganese from 0.00025 to 0.00070 Gm. in 100 cc. of the preparation and from 1% to 2.4% in the ash. Allowing the Nessler tubes to stand stoppered over night insures a clear reading.

In order to judge the quantity of cascara present in a tonic preparation, the following determinations are made:

Solids.—Measure 10 to 50 cc. of the preparation into a tared platinum dish, evaporate to dryness on a steam-bath; heat the residue for 30 minutes in a constant temperature oven at 100° C., report grams in 100 cc. (solids due to 15 minims fluidextract of cascara in alcohol range from about 0.6 to 0.9 Gm. in 100 cc.).

Ash.—Ignite the above solids at dull redness in a muffle furnace to a white ash. (Ash of cascara, 15 minims to ounce, in dilute alcohol, will range from about 0.020 to 0.035 Gm. in 100 cc.)

Color of Preparation.—Pour some of the finished preparation into the 1/16-inch cell of the Lovibond tintometer and match against the yellow slides, matching the shade as nearly as pos-

sible by the addition of red slides. The color of a preparation of fluidextract of Cascara in alcohol, 15 minims to ounce, will read from about 12.6 yellow, 1.2 red to about 16.0 yellow, 1.6 red.

The colorimetric emodin methods, before and after hydrolysis, described in the beginning should be used. Preparations containing 15 minims to the ounce of cascara usually read from 2 to 3 yellow, and 1 to 1.5 red before hydrolysis and, after hydrolysis, yellow $^1/_{16}$-inch cell 6 to 11, and 3 to 5.5 red in $^1/_8$-inch cell of the Loviband tintometer.

The proposed A. O. A. C. Cascara Assay (see method). The total extract in preparations containing in each fluidounce 15 minims of fluidextract will range from about 0.05 to about 0.09 Gm. in each 100 cc. The residue taken up as outlined in the method reads 1.3 to 2.6 yellow in the $^1/_{16}$-inch cell, and 1.4 to 2.4 red in the $^1/_8$-inch cell.

Taste, Odor and Physiological Test.—With even a small amount of experience one can form a fairly good opinion as to whether the cascara that is claimed in a preparation is present.

It has been the invariable experience in our laboratory with hundreds of tonic preparations claiming this drug, that the presence of the "emodin reactions" is followed by corresponding physiological reaction, and when the preparations show weak emodin reactions, the physiological action is also weak.

When a sample of a medicinal preparation, suspected of being short of cascara, is subjected to the various determinations suggested in this article, there is no difficulty in showing its sub-standard character. The most useful determination being in our experience, the colorimetric emodin readings, before and after hydrolysis.

The following table gives the analysis of eight preparations made with cascara from as many leading manufacturing drug houses. The proposed A. O. A. C. method with its colorimetric reading of residues was also determined on these

TWENTY PER CENT ALCOHOL CONTAINING IN EACH FLUIDOUNCE 15 MINIMS FLUIDEXTRACT OF CASCARA.

Manufacturers no.	Solids Gm., 100 cc.	Ash Gm., 100 cc.	Color of preparation read in $^1/_{16}$" cell, color brown.	% Mn in the preparation.	% Mn in ash.	Colorimetric Emodin. Before hydrolysis. $^1/_{16}$" cell Y.	Before hydrolysis. $^1/_8$" cell R.	After hydrolysis. $^1/_{16}$" cell Y.	After hydrolysis. $^1/_8$" cell R.
1	0.789	0.029	15 yellow 1.6 red	0.00066	2.3	2.4	1.1	7.4	3.4
2	0.869	0.029	14 yellow 1.6 red	0.00028	1.0	2.6	1.2	6.4	3.5 R 0.4 Y
3	0.630	0.028	14.6 yellow 1.7 red	0.00028	1.0	2.4	1.1	9.0	4.8
4	0.664	0.022	12.6 yellow 1.2 red	0.00028	1.3	2.2	1.0	5.6	3.2
5	0.491	0.029	13.9 yellow 1.7 red	0.00044	1.5	2.0	1.0	9.4	4.0
6	0.855	0.034	14.1 yellow 1.5 red	0.00056	2.0	2.4	1.2	11.5	5.2
7	0.792	0.027	14.5 yellow 1.5 red	0.00066	2.4	2.1	1.0	6.8	3.0
8	0.838	0.030	15.6 yellow 1.6 red	0.00066	2.2	2.1	1.0	7.0	3.8 R 0.4 Y

preparations but is not shown in the table. The determination of glucosides by a method proposed by Dr. Dohme was also made on the eight cascara preparations; the result was unsatisfactory, and hence omitted.

Bastedo (2), in his "Materia Medica, Pharmacology and Therapeutics," claims that the activity of the vegetable drugs, aloes, frangula, cascara, rhubarb and senna depend upon resinous bodies known as emodins, tri-oxymethylanthraquinone, or a close relative of these.

Sollman (3), in "Manual of Pharmacology" claims that anthraquinone or emodin cathartics—the active constituents of senna, rhubarb and cascara—depend on the glucosidal compounds which accompany these drugs. The pure substances are in themselves too irritant, but the action is graded by their slow liberation and the presence of colloid extractives. The most common of these substances is emodin.

From the *Bulletin* of the Royal Academy of Medicine (Belgian) (4) we obtain the following expression. "Not only do the hydroxymethylanthraquinone produce the purgative effect but other substances must be taken into account with which these form complexes whose structures have not beeen defined. The anthraquinone being undoubtedly an integral part of the puragine complex and the determination of the anthraquinones afford a useful indication of the value of the particular drug. It is stated by Beal and Okey (5) that emodin is characteristic of frangula, rhubarb and cascara and these drugs owe their cathartic properties to the anthraquinone derivatives.

In certain experiments conducted in 1924 using a large corps of nurses as subjects, Dr. Henry C. Fuller (6) reached the following conclusions concerning the significance of the anthraquinone constituents of cascara in relation to the physiological effect of the drug. It is therefore apparent, that the anthraquinone derivatives are of significance in the physiological action of cascara. It is also apparent that the physiological activities depend on the stimulus of some substance, probably enzyme in character.

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NARCOTIC IMPORT QUOTAS.

The Federal Narcotics Control Board has announced its decisions regarding permits for the importation of crude opium and coca leaves for the calendar year 1930, involving a considerable reduction from the importations of last year. The quotas are set at 128,000 pounds of opium and 201,500 pounds of coca leaves, of which 151,500 will be Peruvian and 50,000 Java leaves. This is the first year that permits have been based on calendar years, the change being made to place the statistics in harmony with those of the League of Nations. In the fiscal year ended June 30, 1929, actual imports were 144,925½ pounds of opium and 242,834 pounds of coca leaves, of which 150,727 pounds were Peruvian and 92,107 were Java leaves. No explanation was made for the decrease, except that it was felt that 1929 imports were above normal, in order to replenish stocks depleted by an influenza epidemic.

INTERNATIONAL CONGRESSES.

The International Hygiene Congresses will be held in Dresden, Germany, May 15th to September 30th, conducted under the joint governmental auspices of the German Reich, the Free State of Saxony and the City of Dresden; its world significance is indicated by the participation of more than 200 scientific associations, the League of Nations and the individual governments of 20 countries. An itinerary has been arranged for those who will attend as delegates; *en route* a postgraduate course of round table discussions will be participated in by the members of the party. Conditions in the larger cities will be studied by arrangement of government officials and associations; among the cities named in the invitation to the A. PH. A. are Liverpool, London, Brussels, Cologne, Dusseldorf, Berlin, Potsdam, Prague, Vienna, Salzburg, Munich, Oberammergau, Lucerne, Montreux, Geneva and Paris.

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GALEN DISPLAY IN WELCOME HISTORICAL MEDICAL MUSEUM.

A small exhibition of books and pictures associated with Galen has been arranged at the Wellcome Historical Medical Museum, London, in connection with the eighteen hundredth anniversary of his birth, which is variously given as 130 A. D. or 131 A. D. Most interesting, perhaps, among the early editions of the books are two of the "Methodus Medendi," printed, respectively, in Venice in 1500 and in Paris in 1519, the editor of the latter being Linacre. Galen's "Methodus Medendi vel de Morbis Curandis" is of perennial attraction for pharmacists by reason of its containing the original formula for cold cream. In these days of skilled excavation on an unprecedented scale it is not impossible that a sample of ceratum Galeni, prepared by the "author," may come to light: if this should happen, the Wellcome Museum ought to receive the first offer. Among the paintings and drawings is a curious color print, dated 1774, showing Galen meditating over a human skeleton which is lying on the ground—an incident said to have led to his conversion to Christianity.—From *Chemist & Druggist*, February 15, 1930.

There are no substantiated records (unquestioned) that Galen kept a pharmacy; his "Apotheca" in the Via d'Acra in Rome is said to have been a house where his writings were kept and where physicians came to consult him. It is generally conceded that he traveled far and near to learn the sources of drugs and added largely to the knowledge of vegetable materia medica.

COMMERCIAL ASPECTS OF PROFESSIONAL PHARMACY.*

The prescription department in many a drug store is rich in neighborhood romance. In recent conversation with a retailer of whom I asked permission to make a photograph of his prescription department, I was told a little story that proves my point. Said he, "I'm ashamed of my stock. I would hesitate to permit a photograph to be made of this department if it were to be published over my name. Note that gallon bottle over there; it is almost full. It reminds me of an old lady named Stillman who lived over on Park Avenue. She had some sort of stomach trouble; it bothered her for years. She was a good customer. When Dr. Rockman wrote a prescription for that item, I placed it in stock. The demand was steady until Mrs. Stillman died and ever since that I have had to face $19.00 worth of the product every day. Her memory is fresh to me and probably will be for years to come.

"That gallon bottle in the corner is reminiscent of Joe Peters. You don't remember Joe but he was an old-timer around here. Joe had a bad cough and when 'Doc' Newton finally saw Joe, he gave him a prescription. I bought in small quantities at first and then the salesman offered me a better price on a gallon. It was shortly after that that 'Doc' changed prescriptions.

"Henry Todd has been dead for three years. He suffered from asthma and heart trouble. He went to a big clinic somewhere. He also saw a specialist in Buffalo. He brought home prescriptions that seemed to help him. I was a little skeptical about the steadiness of demand and ordered in small quantities. Twice when Henry's asthma was bad I was out of stock and he was provoked. I then put in quite a supply and Henry up and died. I don't suppose I ever will sell the remainder of that stuff. There are a dozen or more prescription products around here that do not move. Each has a similar story that is hooked up with the people in this neighborhood."

There is no department in a pharmacy that is more of a challenge to the ingenuity of the proprietor than the prescription department. That is reason enough for any pharmacist to make every endeavor to make it pay. After all, it is the very heart of his business, without which his store would soon deteriorate into a soda parlor or a restaurant.

Justifying the existence of a prescription department in a small town is even more difficult than it is in a large center of trade. That this problem is a common one is evidenced in the fact that over half the population of this country lives in towns of 2500 or less. The paved road, the automobile and the growth of hospital facilities in larger centers tend to draw drug store patrons to the city for medical advice, hospital service and their prescriptions.

The pharmacy laws in many states are quite strictly enforced. The small-town pharmacist who obeys the law is required to employ a registered pharmacist. Unless he makes a slave of himself, eats his meals in the store and never takes a vacation or a day off, he must have registered assistance. It is the law. Relief clerks are not available in small towns.

I saw a profit and loss statement of a small-town Indiana pharmacist recently.

* An Address by H. S. Noel before the Section on Practical Pharmacy and Dispensing, Rapid City, So. Dak.

I had never met the proprietor. I did not know the name of his town or any particulars concerning his business other than the fact that his was the only store in town. In reviewing his figures, I was struck with the thought that he was doing a nice business, making a satisfactory profit. His rent was but two per cent of sales. Ordinarily, rent amounts to five per cent even in small towns. On looking over the salary figures and comparing the total for salaries with the proprietor's salary, I noted that the difference was very slight indeed. The statement told me plainly that he did not employ a registered pharmacist. My deduction proved to be true. This store will not average better than five prescriptions per day. Most of these require very little compounding skill. The law says, however, that a registered pharmacist must at all times be present. This man is violating the pharmacy law in his state. He is taking a chance. Who shall say, however, that he is a menace to public safety? I wish very much that I had a solution to offer for this problem.

In larger centers and in cities, an entirely different type of problem presents itself. The possibilities for correcting the difficulties of which I have spoken are more numerous. Here at least the pharmacist has potentialities. He must, however, be alert to ways and means and be fully alive to the fact that the old order of things that permitted him to wait for patrons is no more. The price of success is efficiency, made necessary by an order of things over which he has little control. It is not enough to wait for business. He must create it.

I have talked with several pharmacists who wished they could give up the prescription department. One man told me recently that his son was a disappointment to him. The father had ambitions to educate the boy in pharmacy but the young man was not interested. He was a good son, however, worked hard in the store, was a good business helper but not professionally inclined. The father concluded that because the son was more interested in merchandising than in pharmacy it might be well to drop the professional end and encourage the boy to devote his time to merchandising. Later, I visited this man and went over his store and his stock, and I think, convinced him that it would be a great mistake to abandon his prescription department.

Recently, I read in a magazine the story of a California fruit grower who faced very trying conditions in marketing a fine crop. He was equal to the circumstances, however, and finally engaged a ship and with its perishable cargo sailed away to the Orient where, not without considerable difficulty, he managed to dispose of his fruit. His resourcefulness saved the day for him. It requires resourcefulness to make a success of any business under conditions prevailing to-day. We hear of the difficulties of making money in the prescription department but how many pharmacists are actually doing anything about it or showing any resourcefulness in meeting the situation?

Profits for any department of the drug store are always in direct relation to sales volume, gross margin and overhead expense. When investment is large and volume small, expense is high. And that is the condition we find in many pharmacies. The chances are that the cost of filling a prescription in stores doing relatively a small volume is around 50 or 60 cents out of every dollar received. It is very necessary to know what it actually costs to fill a prescription, yet how few pharmacists know definitely. There is no more room for guess work in pharmacy

than there is in any other business. Facts and figures have replaced theory and tradition. Every pharmacy should be governed by a store policy, a definite set of well-established rules by which the business is managed, prices are established to physicians, nurses, etc. Even in a "two-man" store there should be a clear understanding of individual responsibilities. Prescription promotion plans should be formulated and carried out. An appropriation, however small, should be set aside to give publicity to this department. It should have its share of window attention.

When the Powers Drug Company, of Syracuse, N. Y., opened for business in 1854, goods were purchased just before the Erie Canal opened in the spring and just before it closed in the fall. No one thought in terms of inventory or overhead expense. It took eight days to fill some prescriptions. Drugs were ground by hand in a mortar of iron or stone. Pills were hand-made and plasters were turned out with a spreading iron. There was no national advertising; it was before the time of automobiles and the railroad had not as yet proved its value. It was nearly a quarter century prior to telephones. There have been vast changes with which we are all acquainted.

Most everyone will concede that when it comes to prescription business the individual druggist has a much better opportunity to create volume than has the chain store. Yet there are no small number of chain stores doing a highly satisfactory business and making a very nice profit under conditions that would mean failure to the average individual pharmacist. I know of one chain that reports a 60 per cent gross margin and a turnover of four in its prescription department. Another reports 7 per cent of its volume in prescriptions and 63 per cent gross margin with a turnover of 3.2 times.

Such a showing would have been absolutely impossible in an independent store recently purchased by a chain. This store had daily sales of $40.00 and in the prescription department were found twenty-six cases of pharmaceutical products in containers of one to five gallons, fifteen ounces of Spanish Saffron and two one-pound containers of oil of lemon and of oil of bergamont. This pharmacist would spend fifteen minutes trying to secure a better price on a gallon of Elixir Iron Quinine and Strychnine. He took pride in his skill as a buyer while the carrying charges on slow and dead stock were eating up his profits.

It is not unusual to find an inventory ranging from $2500 to $3000 in individually-owned drug stores. There is nothing wrong with such a stock if the volume warrants it. In most instances it does not. One of two things should be done. Ways and means should be found to increase volume or steps should be taken to decrease the investment and to keep it balanced.

A $10,000 prescription business is not large. Theoretically it represents about thirty prescriptions a day at $1.00 each, and a turnover of about three times. The inventory for such a volume should not exceed $1500 and yet it does in most every pharmacy where the volume is comparable to these figures.

Many pharmacists either do not know costs or else appear to be afraid to charge what their wares and time are worth. Over-pricing loses trade; under-pricing loses profit. There should be no guess work about it. There is ample defense for a just price.

A beautiful booklet recently reached my desk. It was nicely illustrated and was one of the best bits of advertising for pharmacy that I had ever seen. The man who prepared it had done a fine piece of work. I wrote asking for further particulars concerning what appeared to me to be skilful work, representative of a most unusual store. I was much disappointed to learn that the store was on the verge of failure due to poor business planning and practice.

The commodities in a prescription department do not respond to the merchandising effort that promotes the success of the front store. The figures that constitute overhead expense are altogether different in the prescription department. That part of the business should be separated from the other departments as far as inventory, markup and profits are concerned. There should be a system of stockkeeping. There are several such, easily installed, quite as easily maintained. There are always those who say a thing cannot be done, while others are doing it.

I hear pharmacists say that their stock is representative of physicians' specifications. Examination of prescription files does not fully bear this out, however.

Purchasing for a prescription department requires care but not very much skill. Price is a secondary matter. Quality is very important. The best counts for much and is a silent spokesman.

A good way to keep investment down is to buy consistently from a good wholesaler; he makes possible economies far more practical than the concessions offered by one whose sole interest is in creating volume of sales. The difference between a $2000 investment and a $2500 investment may mean considerable in the ratio of profit to investment.

It is not unusual to find a pharmacist with a half-gallon of tincture of iodine purchasing another gallon because of a special price. It is common to find three and four elixirs of the same formula in a pharmacy, each one bearing a different producer's label. Controlled buying avoids duplication, lessens investment and increases profit percentage. In no department of the drug business is it more necessary to buy as you need.

The tendency of the times seems to be for physicians to be a little skeptical of the professional side of pharmacy. Certain it is that preventive medicine, specific measures and specialties have replaced many pharmaceutical mixtures of fluidextracts, tinctures, etc. If I were in business to-day, I should look with disfavor upon the products of any house that did not offer me the fullest measure of coöperation in helping me to build a prescription department. I would not encourage any manufacturer who sold his preparations through other than drug channels. There is good reason to believe that it is better to have your pharmacy known as head-quarters for a certain line of high grade merchandise than it is to have the reputation of stocking everything under the sun. It's much more profitable to follow the former course.

During the next ten years it is not unreasonable to believe that with the many changes going on, pharmacy will show a reaction in common with other lines. Pharmacy will undoubtedly witness a separation of the truly professional activities from the more commercial aspects of the calling. Pharmacy, however, will always be as much a business as it is a profession and it will always respond in proper measure to those who are fitted to cope with the times and are broadminded enough not to be governed by any illusions concerning highbrow theories of pro-

fessionalism. Let us not be unmindful of the fact that pharmacy is unique among the professions, that it is a curious mixture at best in which there can be no hope of material success without business ability. Let us by all means cling to ideals and high standards. On the other hand, no one should for a moment forget that business has always been a forerunner of civilization and the practical application of all scientific discoveries has been due to business methods carefully planned.

GARCIA DA ORTA AND THE FIRST DESCRIPTIONS OF ASIATIC DRUGS.*

BY LIEUT. COMMANDER LOUIS H. RODDIS, MEDICAL CORPS, U. S. NAVY.

The end of the fifteenth century saw two great events, the discovery of the Americas by Columbus and the opening of the sea route to India by Vasco da Gama. As a consequence of these voyages the tropics with all their new and remarkable products were first made known to Europeans.

The original scientific description of many new plants of the western hemisphere was by Oviedo (5), a physician as well as a botanist. In his *Historia general y natural de las Indias*, he describes maize, the pineapple, the prickly-pear, the rubber tree, manioc and the manner in which its poisonous starchy root is rendered edible by washing, the guava from which a delicious jelly is made, the avocado or alligator pear, believed by the natives to have aphrodisiac properties, the calabash or giant gourds, and the sweet potato. The plates showing figures of many of these plants were the first pictures of them published.

What was done for the plants of the New World was done for Asiatic plants by Garcia da Orta, a Portuguese physician and botanist of the sixteenth century (4).

Da Orta was born about 1490 at Elvas, a frontier town of southeastern Portugal celebrated for its antiquity, the purity of its water, and the excellence of its plums, three good things on which to rest the fame of a town. He studied medicine at the Spanish universities of Alcala de Henares and Salamanca, and after a short period of practice in small towns of his native province went to the University of Coimbra as a professor. In 1534 he accompanied a new viceroy to Goa, the capital of Portuguese India (1).

Da Orta spent the rest of his life in the Orient, serving as viceregal physician or in other official capacities, traveling, practicing medicine and studying the natural history of India and the character of its civilization. His travels cannot now be definitely traced but it appears that he visited nearly all the native states on the west coast of India, and the island of Ceylon probably more than once. He held the island where Bombay now stands under a long term lease and had there his botanic or "physic garden." From it he sent many valuable seeds and plants to Portugal, among others tradition says the first plants of the China orange to reach Europe. As this is the parent stock of our citrus fruit, the value of this one importation is considerable (1, 2, 3).

Da Orta was a friend and physician to many of the Indian princes of the Malabar coast who eagerly sought his professional services and who rewarded him with

* Section on Historical Pharmacy, A. PH. A., Rapid City meeting, 1929.

princely fees. About 1560 he settled permanently in Goa to enjoy an old age of wealth and wisdom and to receive the homage which both command (3). He was a friend of the poet Camoens, the historian Correa and the viceroy, and in 1563 he published his celebrated work "The Colloquies on the Drugs and Spices of India (2, 6).

This work is notable for these reasons:

1. It contains the first scientific description of such important Asiatic plants as nux vomica, datura (stramonium), cannabis indica, betel nut and its use, opium, pepper, ginger, cinnamon, cloves, camphor, benzoin, cubeb and such tropical fruits as the mango, mangosteen, custard apple and the durian. He gives the first correct account of the palm and its many uses.

2. In it da Orta describes the methods of growing these and many other drug plants, the native names, the uses, the tests for purity of the crude drug, adulteration, prices and similar matters. It is thus a foundation work in pharmacognosy.

3. It contains the first description by a European medical man of Asiatic cholera.

4. It constitutes a remarkable picture of the tropics and of Asiatic life and culture in the sixteenth century.

5. It was the third European book printed in Asia. A copy of the first edition was recently offered for sale for $6250.

Da Orta's accounts are most interesting and include such non-medical subjects as elephants, chess men, the caste system, an Indian market place and similar matters. Asiatic plants are, of course, the subjects that make up the bulk of the work. Here is his description of the nutmeg and mace. This is from the opening of the thirty-second colloquy which describes the appearance of the nutmeg tree (*Myristica officinalis*), the leaves, flowers and fruit, as well as medicinal virtues attributed to these different parts (2).

"I am able to tell you the various names of the nutmeg and of mace for I asked for them in Malay, Persian, Arabic and Turkish. The tree of the nutmeg is the size of a pear tree and the leaves are rounded as are some pear leaves. Banda, the native place of the nutmeg, belongs to Portugal. The rind is hard, the outer skin harder than that of a green pear. When this is removed there is a very fine rind like that about a chestnut. This delicate skin is the mace. We need not refer more to the thick outer rind except to say that it makes a very good conserve with sugar, is most agreeable to taste and smell and is good for brain and nervous complaints. It comes from Banda in jars of vinegar and some people eat it as salad. When the nutmeg ripens it bursts the outer rind and the mace breaks through and changes to a red color. It is a beautiful sight when the trees are loaded."

He also describes the effects of datura (Stramonium). He supports the observations of the Dutch traveler, Linschoten, regarding the Boccaccio like incidents of infidelity of the wife before the very eyes of her spouse who under the influence of the drug takes reality for a dream. Here is what Linschoten says of datura (3).

"The man sitteth with his eyes open, not doing or saying anything, but laugh or grin like a fool, or a man out of his wits: and when the time cometh that he reviveth out of his trance, he knoweth nothing that was done, but thinketh that he had slept."

Da Orta mentions that datura was often used by thieves to cause the victim to voluntarily give up their possessions and mentions a patient who had given her

jewels in this way to her maid, the latter having administered datura to her mistress in order to effect this result.

All of da Orta's writings were remarkable for their interest, pungency and accuracy. The latter feature is attested by that great pharmacognosist, Frederick Augustus Flückiger who says (1):

"The Colloquies are notable for both the richness of information they contain and their faithful and minute descriptions. No one has described the drug plants of India with so much care, or with such accuracy, and subsequent investigators have almost invariably confirmed the statements of Garcia. The historian of Asiatic drugs must of necessity refer often to Garcia da Orta, his defects are few and may be attributed rather to the lack of modern instruments of precision than to any other cause. The Colloquies will always hold a place of highest honor in the history of pharmacognosy."

Da Orta died at Goa about 1570. At some future time the writer hopes to make a few more short translations from the Colloquies of the original descriptions of nux vomica, opium, cannabis indica, betel nut, cinnamon, ginger, and pepper, as well as of Asiatic cholera and some of the more striking vignettes of Asiatic life and customs (6).

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MERGERS.

We are pleased to quote from an editorial of the February *Industrial & Engineering Chemistry*.

The movement, of such prominence in the last few months, has naturally extended to the drug field, where manufacturing units have found it desirable to merge their interests, where wholesalers have pooled their resources, and where in the retail stores we find some of our best examples of the modern chains. It is to be hoped that this development will not interfere in any degree with the outstanding duty of all those connected with the drug business, which is humanitarian service. * * *

"Mergers are expected to yield profits. They sometimes bring into an organization groups unfamiliar with the traditions and the ethics of the business. Some remedies cannot be produced on a great quantity basis; for fortunately they are not needed in ton lots. But what are made are invaluable to the few who need them. Profits customarily lie with quantity production. Will the merged organization, whether it be the retail chain or the combined manufacturers, continue to be willing to supply the needs where, at times, profits must be secondary? Some believe that present trends may bring a new opportunity to the well-trained individual pharmacist, who, as of old, may make, with his own hands, some of the pills, powders, tinctures and elixirs which may be demanded, but in too small quantity to attract the huge units.

"If the mergers in the drug field follow the precedent established in other lines, they will, in self-interest, expand rather than contract their services, and consider average profits on a complete line rather than returns on individual items. Through standardization and utmost control in production they can improve their products, and give the public reason to be pleased with their service and thankful for their existence. In this lies their opportunity."

DEPARTMENT OF BUSINESS MANAGEMENT

Conducted by Paul C. Olsen.*

COMMENTS, QUESTIONS AND SUGGESTIONS ARE INVITED AND WELCOME.

Readers are invited to submit comments, criticisms and suggestions regarding the material which appears in this department. The Editor also will undertake to answer questions regarding general problems of business management. Letters of general interest will be published, but the writer's name will not be revealed without his permission.

HOW TO REDUCE SALARY COSTS.

BY PAUL C. OLSEN.

By far the largest single item of operating costs in a retail drug store is salary costs. Salary costs range from 10 to 20 per cent of sales, depending upon the type of store. They are lowest proportionately in the largest stores, particularly, if these stores do not have an important amount of professional business. The reason is that in a large store it is possible to employ salespeople in the non-professional parts of the store who do not command as high salaries as professional pharmacists. The cigar counter and the soda fountain are examples of such departments.

In a drug store doing only enough business to justify the employment of one or two salespeople for the entire store, it is evident that one or both of the salespeople will have to be pharmacists, with corresponding salaries, in order that a pharmacist be on duty all the 14 or 16 hours daily that the store is open. Thus all the saleswork in such stores has to be done by pharmacists with a corresponding increase in the proportionate amount of the receipts paid for salaries. There probably are in the United States more stores of this latter type than there are of any other size and type.

Thus the problem of reducing salary costs is sure to be of interest to all druggists because it is the largest single item of their operating costs and of greatest interest to the proprietors of stores employing only one or two people, the type of drug store which is now most numerous in the United States.

When the reduction of salary costs is suggested, a first impression is likely to be that the only way to do it is to pay lower wages to the salespeople. This is the least important of the possible ways to reduce salary costs. In fact, a reduction in wages is apt to have just the opposite to the intended effect. A man capable of earning $60 a week is likely to be able to do three times the work of a person who can command a salary of only $30 a week, and do it better. The person most competent to use his time efficiently in a drug store is the person who naturally commands a salary above average.

One of the most effective ways to reduce salary costs in a drug store is to increase the amount of the average sale. The average sale in a drug store ranges from 20 cents to 80 cents and more. It is a perfectly obvious fact that an 80-cent sale is

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not likely to be four times as costly to make as a 20-cent sale. As a matter of fact, on the same kinds of merchandise, the costs are likely to be almost the same. But if salaries have to be paid from the receipts from 20-cent sales instead of from 80-cent sales, it is evident that a greater part of the receipts of the store will go for salary costs.

When an increase in the size of the average sale in a drug store is proposed, the first and most suggestive way considered is the familiar "companion sale." To the person who asks for razor blades, sell also shaving cream and perhaps also an after-shaving lotion.

Another plan often suggested is the substitution or "forcing" of items, in the sale of which the store is especially interested. Substitution or "forcing" takes the form of more or less clumsy attempts to persuade the customer to accept a brand or style different from the one for which he asked.

There are two basic weaknesses in companion selling and in substitution. One is the cost of such efforts. The amount of time, effort and skill required of a salesperson to make an extra sale of 25 or 50 cents is out of all proportion to the extra profits received from these additional sales.

Of even greater importance is the danger of offending good customers with persistent and indiscriminate sales efforts of this kind. The reaction produced all too often upon customers is expressed by the remark, "Don't go in there—they're always trying to sell you something."

If companion sales and substitutions aren't the way to increase the amount of the average sale and thus reduce salary costs, what is the most profitable and practical way?

The answer is contained in the one word, display. Druggists who have tried this latter method have proved time and again that the economical and profitable way to increase the amount of the average sale is to display in the windows and on the counters the merchandise they want to sell. This method both promotes companion sales and increases the amount of individual sales, at low cost and without running the risk of offending customers.

For instance, the biggest seller in one druggist's line of hot water bottles was an 89-cent number. By displaying constantly the $3.00 hot water bottle at the appropriate seasons, he made this one the leader. Another druggist changed, by the same method, the leading seller of three sizes of a well-known tooth paste from the 25-cent to the 45-cent size. Incidentally, they were doing their customers a favor, because the more costly items were better values.

There is nothing mysterious, difficult or costly about this method of increasing the average sale by window and counter displays. Any druggist can prove its own profitableness to his own satisfaction with merchandise from his own stock. Counter display alone is sufficient for some items.

The second profitable way to reduce salary costs depends for its success upon an analysis of the layout and arrangement of the store. In thousands of drug stores countless needless steps are taken every day which could be saved with a more efficient layout and arrangement of the store and its stock. Cash registers are often so placed as to necessitate sales people taking extra time to wait on customers. In some cases there are not enough cash registers. More often, merchandise, which is bought together by customers is not placed together

or even nearby on the shelves and in the cases. The wrapping counter may be awkwardly placed or poorly laid out.

The ideal toward which the store layout and stock arrangement should be pointed is to serve the greatest possible number of customers in the shortest space of time with the smallest possible number of salespeople.

A third and somewhat related way to reduce salary costs can be used often in many stores, especially those which have sudden rushes of business at particular times of the day, week or month. Again the ideal is to schedule the sales force so that a sufficient number of salespeople will be on duty to take care of the customers at the busiest times and at other times to have on duty only enough to take care of anticipated business.

The procedure also can be reversed. A business-building campaign may be undertaken with the idea of distributing the store's sales more evenly through the day, and through the days of the week, month and year. The hot drink idea at soda fountains is a well-known example.

Naturally such an ideal is difficult to reach or even approach, but any experienced druggist can see that the closer he comes to it, the more favorable will be the effect on his salary costs.

The fourth way to reduce salary costs in a drug store is already suggested, in part, above. Most druggists are so situated that they could do more business without a corresponding increase in salary and other operating costs. Thus all the gross margin on the increased business is net profit. That is why profits in a store, the business of which is increasing, are apt to increase at even a faster rate. That is why the introduction and constant use of business-building plans are so important to the greatest success of a drug store.

In a drug store doing $30.00 a day, almost as much of a sales force is required as in one doing $50.00 or even $60.00 a day. The druggist who is doing only $30.00 a day will have, obviously, more unavoidable idle time on his hands during the day than the druggist in the larger store. Even if the business cannot be increased in volume, profitably, there still is an opportunity to increase its profits in another way. Some druggists do it by using this unavoidable idle time for manufacturing many of the preparations which in most stores to-day are bought ready made. As a practical matter, the only cash cost of such manufacturing in the store is the cost of the materials and supplies used. The druggist has to be there anyway to take care of any customers who may come in.

REPORT ON MEDICINAL TABLETS AND AMPULS.

Suggested tolerances on medicinal tablets and ampuls, with methods of analysis, have been put in printed form by the U. S. Department of Agriculture. The sixth and seventh reports of the committee representing the American Drug Manufacturers Association and The American Pharmaceutical Manufacturers Association, contains these proposed tolerances, for the information and consideration of the Department of Agriculture and the drug trade.

The medicinal tablets involved are: Caffeine citrated, bismuth subcarbonate, bismuth subgallate, bismuth subnitrate and mercuric iodide; the ampuls are of: Caffeine sodium benzoate, camphor in oil, pituitary extract surgical, silver nitrate, sodium cacodylate, sodium iodide and sodium salicylate. Amendments to previous reports on calomel tablets and calomel and soda tablets are given in the report.

THE DEPARTMENT OF THE AMERICAN ASSOCIATION OF COLLEGES OF PHARMACY

C. B. JORDAN—CHAIRMAN OF EXECUTIVE COMMITTEE, A. A. C. P., EDITOR OF THIS DEPARTMENT.

PRESCRIPTION PRICING.

BY GUSTAV BACHMAN AND RUGNAR ALMIN.

When word was received from Prof. A. B. Nichols, Chairman of the Conference of Teachers of Pharmacy, asking me to prepare a brief paper on "prescription pricing" I immediately consulted with Mr. Almin, my co-worker, how best to obtain such information. It was decided that a questionnaire be prepared and mailed to a select list of pharmacists in Minnesota setting forth the purpose of the questionnaire and asking for their coöperation in submitting the minimum charges for compounding prescriptions calling for liquids of various quantities, pills both ready made and hand made, capsules, powders, suppositories and ointments. In sending out the questionnaires special effort was made to solicit the desired information from pharmacists located in towns where there were two or more drug stores. Out of 220 questionnaires mailed 108 or nearly 50% were promptly returned and properly filled out. The following data have been compiled. The lowest and highest prices for each prescription are given first and afterwards the prevailing charge for the prescription: It may be interesting to compare the prices charged for the prescriptions in the Twin Cities and in country towns and, for your convenience, columns with prices are given below:

Prices charged for prescriptions compounded in the Twin Cities.

Liquids:—

1/2 fl. oz., prices ranged from 25¢ to 50¢; prevailing price 35¢.
1 fl. oz., prices from 35¢ to 65¢; prevailing price 50¢.
2 fl. oz., prices from 50¢ to 75¢; prevailing price, 65¢.
3 fl. oz., prices from 60¢ to 85¢; prevailing price 75¢.
4 fl. oz., prices from 75¢ to $1.00; prevailing price 85¢.

Hand Made Pills:—

12 pills, prices from 35¢ to 85¢; prevailing price 50¢.
25 pills, prices from 60¢ to $1.10; prevailing price 75¢.
50 pills, prices from 75¢ to $1.75; prevailing price $1.00.
100 pills, prices from $1.25 to $3.50; prevailing price $1.50.

Prices charged for the same prescription compounded in country towns.

Liquids:—

1/2 fl. oz., prices ranged from 15¢ to 50¢; prevailing price 25¢.
1 fl. oz., prices from 20¢ to 65¢; prevailing price 35¢.
2 fl. oz., prices from 25¢ to 75¢; prevailing price 50¢.
3 fl. oz., prices from 25¢ to 85¢; prevailing price 75¢.
4 fl. oz., prices from 35¢ to $1.00; prevailing price 75¢.

Hand Made Pills:—

12 pills, prices from 25¢ to 75¢; prevailing price 50¢.
25 pills, prices from 50¢ to $1.00; prevailing price 75¢.
50 pills, prices from 50¢ to $1.50; prevailing price $1.00.
100 pills, prices from $1.00 to $2.00; prevailing price $1.50.

Ready Made Pills or Tablets:—

12 pills, prices from 25¢ to 75¢; prevailing price 50¢.
25 pills, prices from 30¢ to $1.00; prevailing price 75¢.
50 pills, prices from 50¢ to $1.25; prevailing price $1.00.
100 pills prices from 75¢ to $2.00; prevailing price $1.00.

Capsules:—

12 capsules, prices from 35¢ to 75¢; prevailing price 50¢.
25 capsules, prices from 65¢ to $1.25; prevailing price $1.00.
50 capsules, prices from $1 to $2.25; prevailing price $1.00.

Powders:—

12 powders, prices from 50¢ to $1; prevailing price 75¢.
25 powders, prices from 65¢ to $1.50; prevailing price $1.
36 powders, prices from 95¢ to $1.85; prevailing price $1.25.

Suppositories:—

6 suppositories, prices from 40¢ to $1.25; prevailing price 75¢.
12 suppositories, prices from 75¢ to $2; prevailing price $1.

Ointments:—

1/2 oz., prices from 25¢ to 55¢; prevailing price 50¢.
1 oz., prices from 35¢ to 80¢; prevailing price 50¢.
2 oz., prices from 50¢ to $1.10; prevailing price 75¢.

Ready Made Pills or Tablets:—

12 pills, prices from 10¢ to 75¢; prevailing price 25¢.
25 pills, prices from 25¢ to $1.00; prevailing price 50¢.
50 pills, prices from 25¢ to $1.25; prevailing price 75¢.
100 pills, prices from 50¢ to $2.50; prevailing price $1.00.

Capsules:—

12 capsules, prices from 25¢ to 85¢; prevailing price 50¢.
25 capsules, prices from 35¢ to $1.50; prevailing price 75¢.
50 capsules, prices from 50¢ to $2.00; prevailing price $1.00.

Powders:—

12 powders, prices from 25¢ to 75¢; prevailing price 50¢.
25 powders, prices from 35¢ to $1.00; prevailing price 75¢.
36 powders, prices from 50¢ to $1.50; prevailing price $1.00.

Suppositories:—

6 suppositories, prices from 25¢ to $1.25; prevailing price 50¢.
12 suppositories, prices from 40¢ to $1.50; prevailing price $1.00.

Ointments:—

1/2 oz., prices from 15¢ to 55¢; prevailing price 25¢.
1 oz., prices from 25¢ to 80¢; prevailing price 50¢.
2 oz., prices from 35¢ to $1.10; prevailing price 75¢.

From the wide range in prices asked it is evident that some pharmacists have no conception whatsoever as to what is a legitimate minimum compounding charge for the prescriptions that they dispense. It seems that they belittle their professional services to the point wherein the compounding and dispensing of a prescription becomes an ordinary "grocery store" transaction.

Upon examination of the questionnaires returned we found that in most cases the druggists in the small towns with no competition asked the lowest minimum compounding fee, whereas they are better situated to ask a higher compounding fee than the druggist located in towns where two or more drug stores are found.

The prevailing minimum fee asked in the Twin Cities was quite consistent with the prevailing fee asked in the country towns.

If the prevailing fee can be taken as a standard to be considered as the proper minimum fee to be asked for these various preparations, then some pharmacists are not receiving what they should in compounding such prescriptions. Compara-

tively the minimum charge asked by some pharmacists is ridiculously low; this is especially true in the country towns. Let me cite for comparison the minimum fee asked by some pharmacists in the Twin Cities and in the country towns with the prevailing charge for liquid preparations in various quantities.

	Country towns.	Twin Cities.	Prevailing price.
½ ounce	15 cents	25 cents	35 cents

or a difference of 20 cents in the country towns, and 10 cents in the Twin Cities from the prevailing price.

1 ounce	20 cents	35 cents	50 cents

or a difference of 30 cents in the country towns, and 15 cents in the Twin Cities from the prevailing prices.

3 ounces	25 cents	60 cents	75 cents

or a difference of 50 cents in the country towns, and 15 cents in the Twin Cities from the prevailing price.

4 ounces	40 cents	75 cents	85 cents

or a difference of 45 cents in the country towns, and 10 cents in the Twin Cities from the prevailing prices.

What has been said about the pricing of the liquids is equally true of the fees charged for compounding other kinds of prescriptions.

We have no reason to believe that the prices reported by some pharmacists were given to make comparison look ridiculous. The lowest and highest prices for each prescription named in many cases were reported by but few pharmacists; the prevailing prices are averages obtained in many instances from more than 100 questionnaires and may be considered as the usual fee for compounding such prescriptions. Pharmacists, in my mind, are underestimating their professional service by charging 20¢ to fill a prescription calling for one fl. oz. mixture.

It is our opinion that the prevailing prices given in the first column can be taken as a fair minimum charge for compounding prescriptions.

GMELIN, A GERMAN FAMILY OF PHARMACISTS, CHEMISTS AND BOTANISTS.*

BY OTTO RAUBENHEIMER.

German pharmacy and German pharmacists have led the way for centuries. Even France makes this acknowledgment, as LaChesnaye des Bois in his "Dictionnaire historique des moeurs, usages et coutumes des François," Paris 1767, Tome I, page 92 makes the following statement: "On dit communement Médécins d'Angleterre, chirurgiens de France et apothicaires d'Allemagne pour designer celles des nations qui excellent dans une de ces professions."

Among German pharmacists, chemists, botanists, physicians, naturalists and even lawyers, the name Gmelin is pre-eminent. That this family of scientists originated in an apothecary shop, which is still in existence to-day, in the university town Tübingen, Wirttemberg in the 17th century, is a credit to pharmacy, of which our profession can justly be proud. It is the ambition of every German

* Section on Historical Pharmacy, A. PH. A., Rapid City meeting, 1929.

pharmacist that his son, or one of his sons, shall be his successor, a rule which deserves adoption in our own country. During three centuries and as four generations the Gmelin family has owned this "Apotheke" in Tübingen, of which further particulars are given under Christian Gottlob Gmelin.

The following genealogical table or family tree gives a clear insight into the descendants of the Gmelin family beginning with Johann Georg, Sr., and the three branches of the family which I take up separately and in chronological order.

FAMILY TREE. JOHANN GEORG GMELIN, APOTHECARY IN TÜBINGEN 1674–1728.

I.	II.	III.
JOHANN CONRAD GMELIN, Pharm. Phys. in Tübingen, 1707–1759.	JOHANN GEORG GMELIN, (Gm. or Gmel.), Botanist, St. Petersburg and Tübingen, 1709–1755.	PHILIPP FRIEDRICH GMELIN, Botanist and Chemist, Tübingen, 1721–1788.
SAM. GOTTLIEB G., Botanist, St. Petersburg, 1743–1774.	CHRIST. GOTTLIEB G., Pharm.-Phys., Tübingen, 1749–1809.	CHRISTIAN V. G., Lawyer.
	EBERHARD G., Physician, Heilbronn, 1751–1808.	JOHANN FRIEDR. G., Prof. Medicine, Göttingen, 1748–1804.
		CHRIST. GOTTLIEB G., Lawyer.
FERD. GOTTLIEB V. G., Prof. Medicine, Tübingen, 1782–1848.	HERM. AUG. G., Lawyer.	CHRIST. GOTTLOB G., Pharmacist, Prof. Chem. & Pharm., Tübingen, 1792–1860.
		EDWARD G., Lawyer.
		LEOPOLD G., Prof. Med. & Chem., Heidelberg, 1788–1853.
		3 Sons, Lawyers.

JOHANN GEORG GMELIN (1674–1728).

The father of the family, usually named the "Older" or "Senior," was a pharmacist and after studying chemistry under the celebrated Urban Hiärne in Stockholm, Sweden, opened the apothecary shop in Tübingen, Wirttemberg. Urban Hiärne (1642–1724) was court physician, director of mines and also of a chemical laboratory, founded in 1683 by King Charles XI of Sweden, which was noted for its pharmaco-chemical researches. Johann Georg Gmelin was the author of a dissertation "Sperma Mercurii," our present Mercury Acetate.

He had 3 sons and for the sake of clearness I will treat them and their descendants in 3 chapters.

I. Johann Conrad Gmelin.
II. Johann Georg Gmelin.
III. Philipp Friedrich Gmelin.

I. JOHANN CONRAD GMELIN (1707–1759).

He was the oldest son and successor to his father as pharmacist-physician in the Tübingen apothecary shop. His many papers on pharmacy and medicine are published in the "Commercium rerum litterarium ad rei medicæ et scientiæ naturalis incrementum institutum," a journal very popular in the first half of the century.

He left two sons, Samuel Gottlieb and Christian Gottlieb.

SAMUEL GOTTLIEB GMELIN (1743–1774).

Born on June 23, 1743, in Tübingen, where he studied medicine, graduated in 1763, went to Holland and formed a friendship with the celebrated Pallas in Leyden. In 1766 he was called to St. Petersburg as Professor of Botany. Upon the request of Empress Catherina II, he, together with Güldenstädt, Lafuchin and Pallas, undertook a scientific expedition to explore the provinces around the

Caspian Sea during 1768–1774. On his return trip he was made prisoner by the Chan of Chaitaken, took sick, and died June 27, 1774 at Achmetkend in the Caucasus. He wrote two books, "Historia Fucorum," St. Petersburg 1768, and "Reisen durch Russland zur Untersuchung der drei Naturreiche," 4 volumes, St. Petersburg 1770–1774.

CHRISTIAN GOTTLIEB GMELIN (1749–1809).

Pharmacist and physician in Tübingen and successor to his father Johan Conrad in the apothecary shop.

He had 3 sons: Ferdinand Gottlieb, Hermann August and Christian Gottlob.

FERDINAND GOTTLIEB VON GMELIN (1782–1848).

Born March 10, 1782, graduated as Doctor with the thesis "Diss. inaug. sistens observationes physicus et chemicus de electricitate et galvanismo." Then

The Gmelin Apotheke in Tübingen, in 1825. (Left corner building, sign above first floor.) Family home of the Tübingen family. John George Gmelin, founder, 1674–1728.

he traveled in Germany, Hungary, Italy and France. In 1805 he became Professor extra ord. of Medicine in Tübingen, 1806 physician to the "Theological Seminary," 1810 Professor ord. of Medicine and Natural Sciences. In 1823 he received the "Kronorden" and was made baron. He died December 21, 1848.

Among his many literary works, I want to mention 2 books:

"Allgemeine Pathalogie des menschlichen Körpers," Stuttgart and Tübingen, 1813 and "Kritik der Prinzipien der Homöopathie," Tübingen, 1835.

HERMANN AUGUST GMELIN.

He was a lawyer and is of no interest in this paper.

CHRISTIAN GOTTLOB GMELIN (1792–1860).

Born October 12, 1792 in Tübingen, where he graduated at the University as M.D. with the thesis: "Diss. inaug. sistens analysin chemican venum hominis, vaccæ et felis." Together with his cousin, Leopold, who was about the same age, and who became the celebrated Heidelberg professor, he traveled in France, England, Norway and Sweden, where he studied under the immortal Berzelius. Upon his return to Tübingen in 1817 he was made Professor ord. of Chemistry and Pharmacy at the university.

He was one of the most noted chemists of his time, analyzed the minerals Helvin and Tourmalin, discovered the red flame of Lithium Salts and invented the artificial Ultramarine in 1828, a cheap substitute for the expensive "Lapis Lazuli." However, he did not receive the prize of 6.000 francs, which the Société d'encouragement created Nov. 10, 1824 and which it awarded to J. B. Guimet in Toulouse who claimed priority in having prepared artificial Ultramarine in 1824, which process he kept secret, so as to perfect it and cheapen it. However, Gmelin was the first to publish the process, as early as March 22, 1828.

Gmelin died May 13, 1860. He is the author of the well-known work "Einleitung in die Chemie" 2 volumes, Tübingen 1833–1837.

Christian Gottlob (not Gottlieb as stated in many books and journals) is of the fourth generation of Gmelins, which owned the old Apotheke in Tübingen. After his death it was sold to one of his students, namely, Hofrat Dr. Wilhelm Mayer, who became Professor of Pharmacognosy at the University. His son, Wilhelm Mayer, is the present owner and to him acknowledgment is due for further particulars.

An old Register of Employees in this Apotheke from the year 1780 gives the name of Carl Friedrich Mohr, the originator of Volumetric Analysis and inventor of the Specific Gravity Balance, the Burette and Pinchcock, named after him. Another episode in this old pharmacy had a tragic end, as on a New Year's Eve the poet Albrecht von Haller, together with one of the drug clerks treated the night policeman on duty with such a large quantity of "Aqua Vitæ" (Brandy) that the latter died during the night. Haller was forced to leave the University on account of this incident.

In the time of the German inflation Apotheker Mayer discovered a large number of letters and poems from such celebrities as Göthe, Schiller, Uhland and Lenau directed to the Gmelin family. On account of the low value of money he was unable to acquire this treasure, which went into the hands of a Swiss firm.

In connection with the Jubilee celebration of the University of Tübingen in 1928 a memorial tablet was attached to the Gmelin Apothecary Shop. For this dedication about 70 members of the Gmelin family were present.

II. JOHANN GEORG GMELIN (1709–1755).

Named the "Younger" or "Junior," was the second oldest son of the Tübingen Apothecary Johann Georg, Sr. He was born June 12, 1709, began the study of Medicine in his native city at the age of 14 under Duvernoy and Cammerer, graduated in 1727, went to St. Petersburg, where he gained the good graces of Lorenz Blumentrost, the President of the Academy of Sciences, and in 1731 was made Professor of Chemistry and Natural Sciences.

In 1733, upon the request of the Emperor, he started out, accompanied by the geographer and astronomer Deslisle de la Croyère, the historian Gerhard Friedrich Müller and Captain Behring, on a scientific expedition in Siberia, from which he returned in 1743. After sifting and tabulating this valuable material with which he enriched the natural sciences, he returned in 1747 to Tübingen where he was made Professor of Botany and Chemistry in 1749, as which he died on May 20, 1755.

He wrote a great nnmber of medical dissertations: De Rhabarbaro, De Febre Miliari, De Tactu Pulsus, De Viis Urinæ, De Corticis Peruviani in Febris Intermittentibus usu, etc. His two master works, which spread the knowledge of Siberian plants, are "Reise durch Sibirien," 4 vol., Göttingen 1751–52 and "Flora Sibirica," 2 vol., St. Petersburg, 1648–49. In 1911 The Verlag Otto Gmelin in Münich published a memorial volume of 146 pages "Johann Georg Gmelin, Der Erforscher Sibiriens," ein Gedenkbuch, which should be consulted for further particulars.

His name has become immortal through the botanical abbreviation Gm. or Gmel. He left 2 sons: Christian von Gmelin, a lawyer and Eberhard, a physician.

EBERHARD GMELIN (1751–1808).

Born May 1, 1751 in Tübingen and died 1808 as physician in Heilbronn. He deserves mention as he was instrumental to popularize Mesmer's Theory of Animal Magnetism together with a scientific explanation, through his 3 books: "Über tierischen Magnetismus," Tübingen 1787, "Neue Untersuchungen über den tierischen Magnetismus," *Ibid.*, 1789 and "Materialien für die Anthrapologie," 2 vol., *Ibid.*, 1791–1793.

III. PHILIP FRIEDRICH GMELIN (1721–1788).

He was the youngest son of the Tübingen apothecary Johann Georg Gmelin, Sr. At the age of 15 he began the study of medicine, traveled in Holland and England in 1750 was made extra ordinary Professor and 1755 ordinary Professor of Botany and Chemistry at the University in Tübingen, where he died May 9, 1788. He is the author of about 20 papers on Botany, Chemistry and Medicine.

Two sons survived him: Johann Friedrich and the lawyer Christian Gottlieb, which latter left 3 sons, all of whom became lawyers.

JOHANN FRIEDRICH GMELIN (1748–1804).

Born in Tübingen on August 8, 1748, died in Göttingen on November 1, 1804. He began the study of Medicine, Botany and Chemistry under his father at the age of fifteen and graduated as M.D. in 1769. After further studies in Holland, England and several German Universities, he returned to Tübingen when he delivered lectures on Botany and Natural Sciences. In 1772 he became Professor of Medicine and in 1775 President of the Philosophical Faculty. In 1780 he accepted a call as Professor of Medicine at the University of Göttingen, where he received his Ph.D. and in 1790 the title "Hofrat." His special studies and lectures comprised Natural History, Chemistry, Botany and Mineralogy. As chemist he was a devoted phlogistonist and consequently an apponent of Lavoisier.

His literary works are very numerous, the "Abhandlungen der Göttinger Societät" alone contains 21 of his researches. He is the author of the following books: "Grundsätze der Technischen Chemie." Halle 1786: 2 ed. 1796; "Onomatologia Botanica completa" 9 vol., Ulm 1771–77, a complete botanical dictionary based upon Linné's System; "Grundriss der Pharmazie (1792), der Mineralogie (1790); "Geschichte der Chemie" 3 vol., Göttingen 1797–9; Geschichte der Gifte," 3 vol. 1776–7, of which the second volume" Geschichte der Pfanzengifte" had a 2nd edition in 1801; "Linné's System a Naturæ," Leipzig, 1788–93, Lincke's Materia Medica," 1785–1800. (This biography is condensed from the one written by the eminent Göttingen pharmacologist Theodor Husemann.)

Johann Friedrich Gmelin left 2 sons, Edward, a lawyer and Leopold, who became Professor of Chemistry and Medicine at the University Heidelberg.

LEOPOLD GMELIN (1788–1853).

Born in Göttingen on August 2, 1788, where he received his Ph.D. with the Thesis: "Diss. inaug. chem. physiol. sistens indagationem chemicam pigment nigri oculorum taurinorum et vitulinorum, adnexis guibusdam in id animadversionibus physiologicid (edit. nova, Heidelberg 1814—German in "Trommsdorff's Journ. Pharm.," 1814). In 1813 he established himself as docent at the University of Heidelberg, where he advanced to Professor extra ord. in 1814 and in 1817 Professor of Medicine and Chemistry. He resigned in 1851 and died on April 13, 1853.

His "Handbuch der Theoretischen. Chemie," 3 Parts, Frankfurt A. M. 1817–19 was an epoch making master work and even to-day is the most complete handbook. By order of the Cavendish Society, H. Watts translated this work into English. The German work consists now of 8 volumes and the English translation of 18 volumes.

He also wrote: Lehrbuch der Chemie, Heidelberg 1844, a well-known chemistry book.

In 1822 he discovered Potassium Ferricyanide $K_3Fe(CN)_6$, still known as Gmelin's Salt, the red potassium prussiate, by oxidizing the yellow potassium ferrocyanide $K_4Fe(CN)_6$ with chlorine. The mineral "Gmelinite," Sodium and Calcium Aluminum Silicate, used for the manufacture of soda, aluminum salts and metallic aluminum, is named after him. Through his analysis of minerals, his cousin Christian Gottlob Gmelin was enabled to prepare Artificial Ultramarine in 1824. Credit is also due to Leopold Gmelin for the discovery of Selenium in Germany and the preparation of Boron and several of its salts. Due to Gmelin's researches, his student, H. Fehling, succeeded in perfecting the Glucose Reagent, which bears his name. The same is true of Ferric Hydroxide as Arsenical Antidote, introduced by his successor Robert W. Bunsen in 1852.

Epoch making were his physiologic-chemical researches together with Friedr. Tiedemann, published as: "Versuche über die Wege auf welchen Substanzen aus dem Magen und Darmkanal ins Blut gelangen, über die Verichtung der Milz und der geheinen Harnwege," Heidelberg 1820. "Die Verdauung mach Versuchen," 2 vol., *Ibid.*, 1826; "Einige Neue Bestandteil der Galle des Ochsen," Poggendorffs Annalen 1827.

"Gmelins Bile Reaction" was first published in his work "Verdauung nach Versuchen," vol. I, page 80. This reaction consists in the slow oxidation of Bilirubin to Biliverdin, therefore the green color.

CONCLUSION.

This story of the Gmelin Family, whose cradle stood in an apothecary shop, and the members of which family were pharmacists, chemists, botanists, physicians, naturalists and even lawyers with a world-wide reputation, should be of interest to every pharmacist who truly loves his profession. All those desiring further information, I beg to refer to the book "Stammbau der Familie Gmelin," Karlsruhe, 1877, which book, however, was not at my command, so I was forced to compile my information from many other sources.[1]

In conclusion, let me express three hopes:

1. Let me hope that this story of the Gmelin Family and their genealogy will clear up the existing confusion in the names of members of the Family especially as to Christian Gott*lob* and *not* Gott*lieb* (1792–1860), of Ultramarine fame.

2. That it will instil into the average pharmacist, young and old, more love for his profession. Let the Gmelin Family show him what has been done and what can be done to create professional pharmacy.

3. That the story will prove to some pharmacists what an interesting, what a fascinating subject History of Pharmacy is. Let the Gmelin Family be followed by biographies or collections of biographies of other families of pharmacists.

THE APOTHECARY IN LITERATURE.

BY EDWARD KREMERS.

No. 37. Tom, the "Doctor's" Apprentice.*

At the Baltimore meeting of the A.A.A.S. in 1908, Professor Hynson conducted several of the attending pharmacists to a restaurant for luncheon. The writer had the pleasure of sitting next to the genial Baltimorian who, judging by the number of fellow citizens who greeted him, was a popular man. Almost invariably he was addressed as "doctor." After this had happened a number of times, he turned to the writer, saying: "Now you see why I want pharmaceutical graduates to be given the doctor's degree." I had been opposed to granting the pharmaceutical graduate a doctor's degree unless he met the requirements usually demanded for the Ph.D. at our best universities. Professor Hynson had advocated the granting of the degree of Doctor of Pharmacy with much lower standards. No doubt, he had been driven, as it were, to this position by the almost universal practice in the south of calling the druggist by the title doctor, as in Kentucky everyone who once shouldered a musket is honored with the title of colonel. As a self-respecting man he did not want to be called "doctor" by his friends unless that degree had been

[1] An addition to this was published in 1922 by a descendant, Otto Gmelin, a well-known publisher of medical works, in Munich "Stammbau der Familie Gmelin, Jüngere Tübinger Linie," by Dekan Eduard Gmelin, which is also illustrated.

* Section on Historical Pharmacy, A. Ph. A., Rapid City meeting, 1929.

awarded by some college. As to the educational standard of the doctor's degree thus conferred he was not so particular, though possibly as high-minded as many a recipient of the M.D. from a medical college a generation ago.

Dr. Tadpole of Captain Marryat's "Poor Jack" seems to have been a druggist surgeon, keeping open shop in Greenwich. We are told nothing directly about his educational and professional qualifications, but indirectly we may infer something about them from remarks made by his apprentice, Tom, who later desires to replace him. "Doctors" with even less claim to the title have not been uncommon in this country.

We are introduced to Dr. Tadpole and his apprentice after Jack's father had administered a sound thrashing to his wife with his "tail," of which the sailor was very fond and which his loving spouse had cut off during his sleep after a night with a bottle. Before leaving his wife, feigning death, the conscience-stricken sailor and husband admonished his son to call the "doctor."

There was a doctor who lived half way up Church Street, a short distance from Fisher's Alley. He was a little man with a large head sunk down between two broad shoulders. His eyes were small and twinkling, his nose snubbed, his pate nearly bald; but on the sides of his head the hair was long and flowing. But if his shoulders were broad, the rest of his body was not in the same proportion—for he narrowed as he descended, his hips being very small, and his legs as thin as those of a goat. His real name was Todpoole, but the people invariably called him Tadpole, and he certainly in appearance somewhat reminded you of one. He was a facetious little fellow, and, it was said, very clever in his profession.

"Dr. Tadpole," cried I, out of breath with running, "come quick, my mother is very bad, indeed."

"What's the matter?" said he, peering over a mortar in which he was rubbing up something with the pestle. "External or internal?"

Although I did not know what he meant, I replied. "Both, doctor, and a great deal more, besides."

"That's bad, indeed," replied Tadpole, still rubbing away.

"But you must come directly," cried I. "Come along—quick!"

"*Festina lente*, good boy—that's Latin for hat and boots. Tom, are my boots clean?"

"Ye'es, sir," replied a carroty-haired boy, whom I knew well.

The doctor laid down his pestle, and taking his seat on a chair, began very leisurely to pull on his boots, while I stamped with impatience.

"Now, do be quick, doctor, my mother will be dead."

"Jack," said the doctor, grinning, as he pulled on his second boot, "people don't die so quick before the doctor comes—it's always afterward; however, I'm glad to see you are so fond of your mother. Tom, is my hat brushed?"

"Ye'es, sir," replied Tom, bringing the doctor's hat.

"Now then, Jack, I'm all ready. Tom, mind the shop, and don't eat the stick-liquorice—d'ye hear?"

"Ye'es, sir," said Tom, with a grin from ear to ear.

The doctor followed me very quick, for he thought from my impatience that something serious must be the matter. He walked up to my mother's room, and I hastened to open the door; when, to my surprise, I found my mother standing before the glass arranging her hair.

"Well!" exclaimed my mother, "this is very pretty behavior—forcing your way into a lady's room."

The doctor stared and so did I. At last I exclaimed, "Well! father thought he'd killed her."

"Yes," cried my mother, "and he's gone away with it on his conscience, that's some comfort. He won't come back in a hurry; he thinks he has committed murder, the unfeeling brute! Well, I've had my revenge."

A more detailed description of the "doctor" and his "shop" we are giving in a later chapter.

When I left Greenwich in 1817 or 1818, it was still standing, although certainly in a very dilapidated state. I will, however, give a slight sketch of it, as it is deeply impressed on my memory.

It was a tall, narrow building of dark red brick, much ornamented, and probably built in the time of Queen Elizabeth. It had two benches on each side the door; for, previous to Tadpole's taking possession of it, it had been an alehouse, and much frequented by seamen. The doctor had not removed these benches, as they were convenient, when the weather was fine, for those who waited for medicine or advice; and moreover, being a jocular, sociable man, he liked people to sit down there, and would often converse with them. Indeed, this assisted much to bring him into notice, and made him so well known among the humbler classes that none of them, if they required medicine or advice, ever thought of going to any one but Dr. Tadpole. He was very liberal and kind, and I believe there was hardly a poor person in the town who was not in his debt, for he never troubled them much about payment. He had some little property of his own, or he never could have carried on such a losing concern as his business really must have been to him. In early life he had been a surgeon in the navy, and was said, and I believe with justice, to be very clever in his profession. In defending himself against some act of oppression on the part of his captain—for in those times, the service was very different to what it is now—he had incurred the displeasure of the Navy Board, and had left the service. His enemies (for even the doctor had his enemies) asserted that he was turned out of the service; his friends, that he left the service in disgust; after all, a matter of little consequence. The doctor is now gone, and has left behind him in the town of Greenwich a character for charity and generosity of which no one can deprive him. He was buried in Greenwich churchyard; and never was there, perhaps, such a numerous procession as voluntarily followed his remains to the grave. The poor fully paid him the debt of gratitude, if they did not pay him their other debts; and when his will was opened, it was found that he had released them all from the latter. Peace be to him, and honor to his worth!

The shop of Dr. Tadpole was fitted up in a very curious manner, and excited a great deal of admiration. During his service afloat he had collected various objects of natural history which he had set up or prepared himself: the lower rows of bottles in the windows were full of snakes, lizards and other reptiles; the second tier of bottles in the window were the same as are now generally seen—large globes containing blue and yellow mixtures, with gold hieroglyphics outside of them; but between each of these bottles was a stuffed animal of some kind, generally a small monkey, or of that description. The third row of bottles was the most incomprehensible: no one could tell what was in them; and the doctor, when asked, would laugh and shake his head: this made the women very curious. I believe they were chiefly preparations of the stomach, and other portions of the interior of the animal frame; but the doctor always said that it was his row of "secrets," and used to amuse himself with evading the questions of the other sex. There were some larger specimens of natural history suspended from the ceiling, chiefly skulls and bones of animals; and on the shelves inside a great variety of stones and pebbles and fragments of marble figures, which the doctor had picked up, I believe, in the Mediterranean: altogether the shop was a strange medley, and made people stare very much when they came into it. The doctor kept an old woman to cook and clean the house, and his boy, Tom, whom I have already mentioned. Tom was a good-natured lad, and, as his master said, very fond of liquorice; but the doctor used to laugh at that (when Tom was not by), saying, "It's very true that Tom cribs my liquorice; but I will say this for him, he is very honest about jalap and rhubarb, and I have never missed a grain."

Of Tom, the apprentice, we learn something more than his capacity to devour licorice, some time after his first introduction to the reader of Marryat's novel.

"It was a beautiful sunshiny warm morning when I arose, and, as Bramble intended that we should leave Greenwich the next day, I thought I might as well call at the house of Dr. Tadpole, and try if I could see him before I went. When I arrived there he was not at home, but my namesake, Tom, was, as usual, in the shop. Tom was two or three years older than me, being

between seventeen and eighteen, and he had now grown a great tall fellow. We always were very good friends, when we occasionally met, and he generally appeared to be as good tempered and grinning as ever; but when I entered the shop I found him very grave and dejected, so much so that I could not help asking him what was the matter."

"Matter enough, I think," said Tom, who was pounding something in the mortar. "I'll not stay here, that's that. I'll break my indentures, as sure as my name's Tom Cob, and I'll set up an opposition, and I'll join the Friends of the People Society, and the Anti-Bible Society, and every other opposition Anti in the Country."

"Why, what has happened, Tom?"

"I'll make speeches against Church and against State, and against the Aristocracy, and Habeas Corpus, and against Physic, and against Standing Armies, and Magna Charta, and every other rascally tyranny and oppression to which we are subjected, that I will!" Here Tom gave such a thump with the pestle that I though he would have split the mortar.

"But what is it, Tom?" inquired I, as I sat down. "What has the doctor done?"

"Why, I'll tell you, the liquorice is all gone, and he won't order any more."

"Well, that is because you have eaten it all."

"No, I haven't; I haven't eaten a bit for these five weeks: it's all been used in pharmacopey, honestly used, and he can't deny it."

"Who used it?"

"Why, I did: he said he wouldn't stand my eating liquorice, and I told him that I shouldn't eat any more. No more I have, but I ain't well, and I prescribes for myself. Haven't I a right to do that? Mayn't I physic myself? I am a doctor as well as he is. Who makes up all the medicine, I should like to know? Who ties up the bottles and writes directions? Well, my insides are out of order, and I prescribes for myself—black draughts '*omnes duas horas sumendum;*' and now he says that, as the ingredients are all gone, I shan't take any more."

"And pray what were the ingredients, Tom?"

"Why, laxative and alterative, as suits my complaint—*Extract. liquor—aqua pura—haustus.*"

"And what is that?"

"Liquorice and water, to be sure; there's nothing else I can take. I've tasted everything in the shop, from plate powder to *aqua fortis*, and everything goes against my stomach."

"Well, Tom, it's a hard case; but perhaps the doctor will think better of it."

"He'd better, or I'll set up for myself, for I won't stand it any longer; it ain't only for myself but for others that I care. Why, I've a hankering for Anny Whistle (you know her, don't you?), a pretty little girl with red lips—lives in Church Street. Well, as long as I could bring her a bit of liquorice when I went to see her all was smooth enough, and I got many a kiss when no one was nigh; but now that I can't fork out a bit as big as a marble, she's getting quite shy of me, and is always walking with Bill, the butcher's boy. I know he gives her bull's eyes—I seed him one day buying a ha'p'orth. Now, ain't that hard?"

"Why, certainly, the affair becomes serious; but, still, how you are to set up for yourself I don't know. You are not qualified."

"Oh! ain't I? Just as much as most doctors are. There must be a beginning, and if I gives wrong medicines at first, then I'll try another, and so on, until I come to what will cure them. Soon learn, Tom."

"Well, but how will you do about surgery?"

"Surgery? Oh, I'll do very well; don't know much about it just now—soon learn."

"Why, would you venture to take off a man's leg, Tom? Do you know how to take up the arteries?"

"Would I take off a man's leg? To be sure I would, as quick as the doctor could. As for the arteries, why, I might puzzle a little about them; but by the time I had taken off three or four legs I should know something about them. Practice makes perfect—soon learn, Tom."

"But all your first patients would die."

"I don't know that. At all events I should do my best, and no man can do more, and if they did die, why, it would be the visitation of God, wouldn't it?"

"Not altogether, I'm afraid. It won't do, Tom."

"It has done from the beginning of the world, and will do. I say there's no learning with-

out practice. People spoil at first in every trade, and make afterward, and a man ain't born a doctor any more than he is a carpenter."

"No, but if I recollect right, to be a surgeon you ought to walk the hospital, as they term it."

"Well, and haven't I for these last four years? When I carries out my basket of physic I walks the hospital right through, twice at least every day in the week."

"That's Greenwich Hospital."

"Well, so it is, and plenty of surgical cases in it. However, the doctor and I must come to a proper understanding. I didn't clean his boots this morning. I wish, if you see him, Tom, you'd reason with him a little."

"I'll see what I can do, but don't be rash. Good-by, Tom; mind you tell the doctor that I called."

"Well, I will; but that's not in my indentures."

I called in at the widow's after I left the doctor's shop, and communicated the intended rebellion on the part of Tom.

"Well," said Mrs. St. Felix, "I shall not forget to make the Spanish claim, and prevent Tom from walking Spanish. The doctor is very inconsiderate; he forgets that Tom's regard for liquorice is quite as strong as his own liking for a cigar. Now, if the doctor don't promise me to have a fresh supply for Tom, I won't let him have a cigar for himself."

The doctor was compelled to surrender at discretion. The next wagon brought down one hundred weight of liquorice, and Tom recovered his health and the smiles of Anny Whistle."

Having outgrown his "licorice love" episodes the reader is informed of a more serious affair.

"I quitted the hospital, and had arrived in Church Street, when, passing the doctor's house on my way to Mrs. St. Felix, Mr. Thomas Cobb, who had become a great dandy, and, in his own opinion at least, a great doctor, called to me, 'Saunders, my dear fellow, just come in, I wish to speak with you particularly.' I complied with his wishes. Mr. Cobb was remarkable in his dress. Having sprung up to the height of at least six feet in his stockings, he had become remarkably thin and spare, and the first idea that struck you when you saw him was that he was all pantaloons; for he wore blue cotton net tight pantaloons, and his Hessian boots were so low, and his waistcoat so short, that there was at least four feet, out of the sum total of six, composed of blue cotton net, which fitted very close to a very spare figure. He wore no cravat, but a turn-down collar with a black ribbon, his hair very long, with a very puny pair of mustachios on his upper lip, and something like a tuft on his chin. Altogether, he was a strange looking being, especially when he had substituted for his long coat a short nankeen jacket, which was the case at the time I am speaking of.

"Well, Mr. Cobb, what may be your pleasure with me? You must not detain me long, as I was about to call on Mrs. St. Felix."

"So I presumed, my dear sir," replied he; "and for that very reason I requested you to walk in. Take a chair. Friendship, Tom, is a great blessing; it is one of the charms of life. We have known each other long, and it is to tax your friendship that I have requested you to come in."

"Well, be as quick as you can, that's all," replied I.

"Festina lent, as Dr. Tadpole often says, adding that it is Latin for hat and boots. I am surprised at his ignorance of the classics; any schoolboy ought to know that caput is the Latin for hat, and Boötes for boots. But lately I have abandoned the classics, and have given up my soul to poetry."

"Indeed!"

"Yes; 'Friendship and Love' is my toast, whenever I am called upon at the club. What does Campbell say?"

"I'm sure I don't know."

"I'll tell you, Tom—

" 'Without the smile from heav'nly beauty won,
Oh, what were man? A world without a sun.' "

"Well, I dare say it's all true," replied I; "for if a woman does not smile upon a man he's not very likely to marry her, and therefore has no chance of having a son."

"Tom, you have no soul for poetry."

"Perhaps not; I have been too busy to read any."

"But you should; youth is the age of poetry."

"Well, I thought it was the time to work; moreover, I don't understand how youth can be age. But pray tell me what is it you want of me, for I want to see Mrs. St. Felix before dinner-time."

"Well, then, Tom, I am in love—deeply, desperately, irrevocably and everlastingly in love."

"I wish you well out of it," replied I, with some bitterness. "And pray with whom may you be so dreadfully in love—Anny Whistle?"

"Anny Whistle!—to the winds have I whistled her long ago. No, that was a juvenile fancy. Hear me. I am in love with the charming widow."

"What, Mrs. St. Felix?"

"Yes. Felix means happy in Latin, and my happiness depends upon her. I must either succeed, or—Tom, do you see that bottle?"

"Yes."

"Well, it's laudanum; that's all."

"But, Tom, you forget; you certainly would not supplant your patron, your master, I may say your benefactor—the doctor?"

"Why not? He has tried, and failed. He has been trying to make an impression upon her these ten years, but it's no go. Ain't I a doctor, as good as he? Ay, better, for I'm a young doctor, and he is an old one! All the ladies are for me now. I'm a very rising young man."

"Well, don't rise much higher, or your head will reach up to the shop ceiling. Have you anything more to say to me?"

"Why, I have hardly begun. You see, Tom, the widow looks upon me with a favorable eye, and more than once I have thought of popping the question over the counter; but I never could muster up courage, my love is so intense. As the poet says—

" 'Silence in love betrays more woe
Than words, howe'er so witty;
The beggar that is dum, you know,
Deserves our double pity.' "

"Now, Tom, I wish to tax your friendship. I wish you to speak for me."

"What, speak to Mrs. St. Felix?"

"Yes, be my embassador. I have attempted to write some verses; but somehow or another I never could find rhymes. The poetic feeling is in me, nevertheless. Tell me, Tom, will you do what I ask?"

"But what makes you think that the widow is favorably inclined?"

"What? why, her behavior, to be sure. I never pass her but she laughs or smiles. And then the doctor is evidently jealous; accuses me of making wrong mixtures; of paying too much attention to dress; of reading too much; always finding fault. However, the time may come—I repeat my request; Tom, will you oblige me? You ought to have a fellow-feeling."

This last remark annoyed me. I felt convinced that Mrs. St. Felix was really laughing at him, so I replied, "I shall not refuse you, but recollect that he who has been so unsuccessful himself is not likely to succeed for others. You shall have your answer very soon."

"Thanks, Tom, thanks. My toast, as I said before, when called upon, is 'Friendship and Love.' "

The answer was soon delivered by Tom, the sailor, to Tom, the "doctor," who claimed to be a better doctor than his preceptor, because he was a "young doctor."

"Why," replied I, hardly having made my mind up what to say, yet not wishing to hurt his feelings, "the fact is, Tom, that the widow has a very good opinion of you."

"I knew that," interrupted Tom.

"And if she were ever to marry again—why, you would have quite as good a chance as the doctor."

"I was sure of that," said he.

"But at present, the widow—for reasons which she cannot explain to anybody—cannot think of entering into any new engagement."

"I see—no regular engagement."

"Exactly so; but as soon as she feels herself at liberty—."

"Yes," said Tom, breathless.

"Why, then she'll send, I presume, and let you know."

"I see, then, I may hope."

"Why, not exactly—but there will be no occasion to take laudanum."

"Not a drop, my dear fellow, depend upon it."

"There is no saying what may come to pass, you see, Tom: two, or three, or four years may—"

"Four years—that's a very long time."

"Nothing to a man sincerely in love."

"No, nothing—that's very true."

"So all you have to do is to follow up your profession quietly and steadily, and wait and see what time may bring forth."

"So I will—I'll wait twenty years, if that's all."

"I wished Tom good-by, thinking that it was probable that he would wait a great deal longer; but at all events, he was pacified and contented for the time, and there would be no great harm done, even if he did continue to make the widow the object of his passion for a year or two longer. It would keep him out of mischief, and away from Anny Whistle."

Former president John F. Hancock at his desk (1919). He was president of the AMERICAN PHARMACEUTICAL ASSOCIATION, 1873–1874. He died November 12, 1923. Mrs. Hancock recently celebrated her 89th birthday, and is looking forward to a visit with old friends. In later years Dr. Hancock was interested in the Procter Memorial soon to become a reality. Wm. Procter, Jr., was born in Baltimore.

PHARMACEUTICAL AND MEDICAL KNOWLEDGE OF BALZAC.*

BY L. E. WARREN.

About a decade ago the late Professor Linton presented before this Section a series of interesting papers concerning the pharmaceutical and medical knowledge of several celebrated writers of fiction[1] as displayed in their works. Prof. Linton's plan consisted in reviewing the novels of an author and discussing those passages which showed that the writer had some knowledge of pharmacy and medicine as known in his day and age. From correspondence and conversations with Prof. Linton I learned that it was his intention to continue the series until most of the novelists who had shown any marked insight into pharmacy or medicine had been studied. Unfortunately this plan was interrupted by Professor Linton's death and until recently, so far as I know, no one else has entered this particular field. Professor and Mrs. LaWall have given an interesting account of the knowledge of pharmacy and science possessed by Dickens.[2] Also Professor Kremers has published a delightful study of Balzac's "Druggist Perfumer," Caesar Birouteau.[3] These appeared after the greater portion of my own studies of Balzac had been made.

For a number of years I have been an enthusiastic reader of Balzac and it has seemed to me worth while to try to bring before you some of the characters and passages in his writings which show that Balzac had considerable knowledge of pharmacy, chemistry and medicine as these were understood a hundred years ago, and that he was interested in pharmacists, chemists and drugs. He had been a lawyer's clerk and had never served in the shop of an apothecary nor had he studied medicine. He made use of such knowledge of chemistry and medicine as was possessed by the most intelligent French citizens of his time.

Balzac arranged most of his important writings in what is known as "La Comedie Humaine" (The Comedy of Human Life). Perhaps it might better have been named "The Tragedy of Human Life." His design in writing The Human Comedy, he tells us, was to prepare a "Natural History of Man." He says:[4]

> The vastness of the plan, which includes both a history and a criticism of society, an analysis of its evils and a discussion of its principles, authorizes me, I think, in giving my work the title under which it now appears, "The Human Comedy."

In "The Human Comedy" Balzac attempted to portray every human emotion in all the varying degrees exhibited by man. Love and hate, altruism and avarice, generosity and greed, magnanimity and anger, hope and despondency, grief, pleasure, pain, approbation and scorn, follow each other like the ever-changing colors in a kaleidoscope. He attempted to paint every type of character, to depict every phase of human activity, to describe every profession, occupation and trade. Naturally one lifetime was too short to complete such a vast project; yet there are more than two thousand individual characters in "The Human Comedy," many of whom appear again and again. Princes and paupers, nobles and peasants, politicians and

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* Section on Historical Pharmacy, Rapid City meeting, 1929.

[1] A. W. Linton: "Pharmacy and Medicine of Sir Walter Scott," Jour. A. Ph. A., 6 (1917), 158. "Pharmacy and Medicine of George Eliot," *Ibid.*, 8 (1919), 1042. "Pharmacy and Medicine of Charles Kingsley," *Ibid.*, 10 (1921), 46.

[2] Charles H. and Millicent LaWall, *Am. J. Pharm.*, 101 (1929), 6.

[3] E. Kremers, *Ibid.*, 101 (1929), 278.

[4] Preface to "The Human Comedy."

authors, apothecaries and chemists, lawyers and notaries, doctors and priests, printers and painters, sages and idiots, lovers and mistresses, sailors and soldiers, angels and courtesans are brought across his pages in bewildering procession. Even horses, dogs, chickens and toads have names and individualities and play their parts as the plots require. "The Human Comedy" is a picture of French society of a century ago. It is far more than a picture—it is a mirror of Human Nature.

References to medicines and their sources, to disease and to methods for treating the sick are constantly made throughout The Human Comedy, so that it would be manifestly impossible to mention them all in a study of reasonable length. I have, therefore, selected a few stories which are richer in pharmaceutical and medical lore than others and I have tried to retell the chief incidents in such a manner that the chemical, pharmaceutical and medical allusions will be understood by those who are not familiar with the stories as a whole. In addition I have indicated the drugs and diseases most often mentioned by Balzac and have noted his leanings toward clairvoyance, mesmerism, phrenology, and other occult subjects.

Unlike Molière and Dickens, neither of whom ever lost an opportunity to ridicule the medical profession, Balzac had a general affection for physicians, and some of his doctors are among the finest characters in French literature. In fact there is probably no delineation in any literature of a more saint-like physician than Benassis, "The Country Doctor." Among Balzac's favorites are two which are worthy of mention—Daniel D'Arthez, the novelist, and Horace Bianchon, the physician—"the great writer" and "the great doctor" as he loved to call them. We may believe that D'Arthez was the noble, magnanimous and successful writer that Balzac himself dreamed to become. We may be sure that Bianchon represents the charitable, patient and altruistic doctor which Balzac would like every physician to be. D'Arthez need not concern us further, but Bianchon will appear often, for it is through him that we get much of our insight into Balzac's knowledge of physiology and medicine. Bianchon was a disciple of Desplein, a celebrated surgeon of Paris. The early garret life of these three—D'Arthez, Bianchon and Desplein—gives us many a glimpse of Balzac's own terrific, lifelong struggles against poverty and lack of appreciation.

One of Bianchon's first patients was Old Goriot.[1] This man had been a vermicelli manufacturer and had become wealthy. His two daughters, whom he worshipped and who had married rich but penurious men, had wheedled money out of their father on one pretext or another until he had become reduced to poverty. Their pitiless and avaricious demands on their father bring on him an attack of apoplexy. Bianchon, who is still a medical student, Goriot and Rastignac, a law student, board and lodge at the Vauquer boarding house. The poverty-cramped students spend their last sous and Rastignac pawns his watch to buy fuel and bed clothing for the sick man, while Bianchon obtains credit for medicines at the apothecary's. Bianchon cares for the dying man with the tenderness of a nurse, but at the same time studies his patient with the cold calculation of an expert diagnostician. The students apply mustard plasters and leeches, give foot-baths, and dose the patient with tisanes. Bianchon's teachers are called in. They apply moxas to the spine and order opium to be applied to the diaphragm, but it is of no avail. Goriot dies and is buried by the students, the daughters and their husbands contributing not a centime.

In 1828, Dr. Bianchon was called to Provins from Paris by Dr. Martener in consultation over Pierrette Lorrain[2] who was suffering from an abscess in the ear caused by a fall. She had been neglected for a long time by her cruel relatives before any doctor was consulted. Martener and Bianchon did everything known to science for the lovely child. Desplein came from Paris and trephined Pierrette's skull but she died from caries of the bone, toxemia and exhaustion.

Bianchon treated an abscess in the head of Claudine, La Palferine's mistress.[3] She had wonderful hair and Bianchon wished to cut it in order to operate. Claudine would not consent unless La Palferine were willing. The doctor sought the lover. "Cut off Claudine's hair!" he cried in peremptory tones, "No, I would rather lose her." The mistress thought that a proof of love. Bianchon had to operate without removing the hair but he saved his patient.

Sometimes Bianchon gives more than professional care and medicines to his patients. He attends Caroline Crochard,[4] a former mistress of Count de Granville. Late one night as he is leaving his patient's rooms he meets the Count and, without knowing of their former relationship, tells him of the wretched woman's condition. She had left the Count, who sincerely loved

[1] Old Goriot. [2] Pierrette. [3] The Prince of Bohemia. [4] A Second Home.

her and who was the father of her children, for a worthless gambler who had dissipated her small fortune. She was obliged to work early and late to keep her children from starving and her lover would often rob her of her earnings so that her children were without food. Said Bianchon:

> Only three days ago she sold her hair, the finest hair I ever saw; she came in, she could not hide the gold piece quickly enough and he asked her for it. For a smile, for a kiss she gave up the price of a fortnight's life and peace. Is it not dreadful, and yet sublime? But work is wearing her cheeks hollow. Her children's crying has broken her heart; she is ill and this moment moaning on her wretched bed. This evening they had nothing to eat; the children have not strength to cry, they were silent when I went up.
>
> The Count said: "I can guess, my young friend, how it is that she is yet alive if you attend her."
>
> The doctor: "Oh, poor Soul! Who could refuse to help her? I only wish I were richer, for I hope to cure her of her passion."

In another instance[1] Bianchon is called to Montégnac by Dr. Roubaud in consultation over Mme. Veronique Graslin. Because of a secret sin in earlier life through which her lover had been brought to the scaffold with sealed lips, this woman for fifteen years had "condemned herself to frightful austerities and the most implacable mortifications of her flesh" with the result that she was brought to her deathbed. Bianchon told her:

> You are preserving your faculties in the last stage of a disease in which the Emperor's brilliant intellect sank* * *You must think of nothing but your salvation.

Balzac was familiar with the arrogant, bombastic, braggadocian species of doctor. This is shown in "Wild Ass' Skin,"[2] an allegorical romance. Raphael Valentin, a poet and scientist, decides on suicide because of poverty, hopeless love for a heartless flirt, and lack of influential friends. Awaiting the night to jump into the Seine, he looks into a curiosity shop to pass the time. The centenarian owner divines his intention and offers him a magic skin with which to end his life. The skin has a Sanskrit inscription indelibly written on it, which announces that the shagreen is capable of granting its master's every wish (except prolongation of life) but that with every demand made of the skin it will shrink and when it has diminished to nothing, the owner will cease to live. Raphael takes the skin. Wealth, a beautiful love, triumph over his insulters, every desire that the human heart longs for (except long life) becomes his. He is then possessed with a maniacal desire to keep the skin from shrinking. He consults Planchette, the noted physicist, and the mechanic, Spieghalter. They subject the leather to enormous hydraulic pressure in the effort to increase its surface. The press breaks and wrecks the foundry, but the skin does not expand. Raphael consults the celebrated chemist, Japhet, in the hope of discovering the secret of the skin. Japhet's analysis included treatment with fluoric acid, red potash, electric shock and chloride of nitrogen but the dreadful tailisman was not changed.

As the skin continues to shrink, Raphael's health fails. In consultation with Bianchon he calls three of the great doctors of Paris, Brisset, the head of the Organic School, Caméristus, the head of the Vitalists and Maugredie, the Pyrrhonist and a scoffer, with the scalpel for his one article of faith. Raphael can discover no trace of feeling for his troubles in any of the three doctors. They take five pages to give their pitiless opinions, no two being in agreement. A few lines from one are quoted as an example:

> It is easy, gentlemen, to recognize in the symptoms of the face and body generally intense irritation of the stomach, an affection of the great sympathetic nerve, acute sensibility of the epigastric region, and contraction of the right and left hypochondriac. You have noticed, too, the large size and prominence of the liver. M. Bianchon has, besides, constantly watched the patient, and he tells us that digestion is troublesome and difficult. Strictly speaking, there is no stomach left, and so the man has disappeared. The brain is atrophied because the man digests no longer. The progressive deterioration wrought in the epigastric region, the seat of vitality, has vitiated the whole system. Thence, by continuous fevered vibrations, the disorder has reached the brain by means of the nervous plexus, hence the excessive irritation in that organ.

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[1] The Country Parson. [2] The Wild Ass' Skin.

Bianchon, however, was different. There was deep, unconcealed distress and grave compassion on his face. "He had been a doctor for too short a time to be untouched by suffering and unmoved by a deathbed." "Believe me, Raphael," he said, "we effect no cures, we only assist them. Another system—the use of mild remedies while Nature exerts her powers—lies between the extremes of Brisset and Caméristus, but one ought to have known the patient for some ten years or so to obtain a good result on these lines." This is an illustration of Balzac's leanings toward the Eclectic school of medicine just then coming into notice. Bianchon orders leeches to be applied to the stomach, a trip to Savoy for the waters and careful diet but the skin shrinks to nothing and Raphael dies.

Of all the 97 stories to which Balzac attached his name the three which he most wished to leave as a monument to his memory are "Seraphita," "Louis Lambert" and "The Country Doctor." Into these he put "the breath of his soul." Balzac himself wrote of "The Country Doctor" when finished:

> I have done a great thing for my country. The book is, to my mind, worth more than laws or battles won. It is the Gospel in action.

Contrary to what might be expected, "The Country Doctor" contains relatively little that concerns pharmacy or medicine. The name of the Country Doctor is Benassis. Broken by great sorrows and loss of fortune Benassis is hesitating between suicide and the Church when his attention is called to a miserable, cretinous village in the south of France. He settles there, studies medicine and devotes his life to the welfare of the inhabitants. He builds comfortable houses in the sun and, in spite of great oppositions and at the risk of his life, he moves the cretins from their damp, shaded huts into the light, where their drinking water was no longer melted snow from the mountain torrent. He introduces improvements in agriculture, better stock and industries, and in a few years the village and surrounding country become a flourishing, happy community. Although Dr. Benassis knows nothing of the influence of iodine on thyroidism he recognizes the value of hygienic surroundings in the prevention and treatment of cretinism. He knows also about the propagation of the disease through heredity. Benassis believes in simple remedies. In one instance he prescribes tisane of couch grass as sole diet and medicine.

The creator of The Human Comedy was a firm believer in physiognomy. He was familiar[1] with the great work[2] of the Swiss naturalist, Lavater, published in 1797 and I have reason to believe that some of the minute descriptions of his characters are based on Lavater's theories. One of his best portraits, that of the Jewish doctor, Halpersohn,[3] is quoted:

> * * *Halpersohn was a man of fifty-six, with short bow legs and a broad, powerful frame. There was an Oriental stamp about the man, and his face must in youth have been singularly handsome; the remains showed a marked Jewish nose, as long and curved as a Damascus scimitar. His forehead was truly Polish, broad and lofty, wrinkled all over like crumpled paper, and recalling that of a Saint-Joseph by some old Italian master. His eyes were sea-green, set like a parrot's in puckered grey lids, and expressive of cunning and avarice in the highest degree. His mouth, thin and straight, like a cut in his face, lent his sinister countenance a crowning touch of suspiciousness.
>
> The pale, lean features—for Halpersohn was extraordinarily thin—were crowned by ill-kept grey hair and graced by a very thick, long beard, black streaked with white, that half hid his face, so that only the forehead and eyes, the cheek bones, nose and lips were visible.

That Balzac was not unaware of the mercenary side of medicine is revealed by this description of the Jewish doctor. This man who was called a charlatan by many and was praised to the skies by others whom he had cured, undertook the cure of an apparently hopeless invalid, Vanda de Mergi. This lady was afflicted with one of the strangest diseases mentioned in The Human Comedy (if not in all literature). Her symptoms had been so many and so variable over a period of 17 years that several pages are required to describe them. Desplein, Bianchon and Haudry when they first saw her thought she was malingering. They were utterly baffled and left her in charge of the charity doctor of the district, Dr. Berton. She was nursed by her

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[1] Ursule Mirouet.

[2] Lavater, Jean Gaspard: L'Art de Connaitre les Hommes par la Physionomie.

[3] The Seamy Side of History.

father and young son, her mother and husband having died from over-work and anxiety in caring for her. When discovered by an agent of the Brotherhood of Consolation the family was in extreme poverty.

Halpersohn charged 200 francs for examination and a thousand crowns for the cure (both paid in advance) as well as for board at his hospital. Without the aid of the Brotherhood he would never have seen the patient as he took no charity patients and collected in advance. Halpersohn diagnosed the malady as *Plica polonica* and in a few months Vanda was completely cured. Pharmacists would like to know what drugs were used but Balzac gives only a hint.

> It is very little known in Western Europe that the Slav nations possess a store of medical secrets. They have a number of sovereign remedies derived from their intercourse with the Chinese, the Persians, the Cossacks, the Turks and the Tartars. Some peasant women, regarded as witches, have been known to cure hydrophobia completely in Poland with the juice of certain plants. There is among those nations a great mass of uncodified information as to the effects of certain plants and the powdered bark of trees, which is handed down from family to family, and miraculous cures are effected there.
>
> Halpersohn had the innate instinct of a great healer. Not only was he learned; he had observed with great care, and had travelled all over Germany, Russia, Persia and Turkey, where he had picked up much traditional lore; and as he was learned in chemistry, he became a living encyclopedia of the secrets preserved by the "good women," as they were called, the midwives and "wise women" of every country whither he had followed his father, a wandering trader.

TOXICOLOGY.

Had Balzac been a critical student of chemistry as it was known during the last two decades of his life it is possible that he would have elaborated some intricate problems in toxicology. He deals with poisons for the most part in a melodramatic rather than in a scientific way. Maulincour,[1] Pigeron[2] and Peyrede[3] were mysteriously poisoned, the latter, according to Desplein who made the autopsy, by an extract from a species of *Strychnos* from the Malay Archipelago. Esther van Gobseck killed herself[4] by a Javenese poison which she had obtained in a roundabout way from Jaqueline Collin. She first tried the poison on her dog to make sure of its effectiveness.

> Esther called Romeo: Romeo ran up on legs so supple and thin, so strong and sinewy, that they seemed like steel springs, and looked up at his mistress. Esther, to attract his attention, pretended to throw one of the pills.
>
> "He is doomed by his name to die thus," said she, as she threw the pill which Romeo crushed between his teeth.
>
> The dog made no sound; he rolled over and was stark dead.

Only once in The Human Comedy does Balzac give details of murder by poisoning. This is in Cousin Pons.[5] Remonencq is a greedy and unscrupulous dealer in old metals. Pons is a musician by profession and an art collector by avocation. Old, poor, lonely and eccentric he has always spent his meager savings for pictures and has lived in poverty. Although having no more than the bare necessities of life and sponging on his friends for his dinners, he had collected priceless treasures in paintings, statuary and miniatures. None of his acquaintances suspects the great value of his collections and he is careful that no one shall have that knowledge. Pons is afflicted with a landlady, Madame Cibot, a tailor's wife, who is as greedy and unscrupulous as Remonencq but more intelligent than the metal dealer. She conspires with Remonencq and one of Pons' rival collectors, Elie Magus, a Jew, to steal and sell some of Pons' treasures. When Pons falls ill, under a pretext of raising money to pay for nursing, and medical attendance, she sells Magus four of the finest paintings at a fraction of their value but pockets most of the proceeds. Remonencq realizes that this is a fine stroke of business on the part of Madame Cibot. He sees himself as a welcome suitor if only M. Cibot, who is already ill, were out of the way.

> . . .his eyes fell upon a copper disc, about the size of a five-franc piece, covered thickly with verdigris. The economical idea of using Cibot's medicine to clean the disc immediately occurred to him. He fastened the thing to a bit of twine, and came over every morning to inquire for tidings of his friend, timing his

[1] The Thirteen (Ferragus). [2] The Peasantry. [3] The Harlot's Progress. [4] *Ibid.*
[5] Cousin Pons.

> visit during La Cibot's visit to her roomers upstairs. He dropped the disc into the tumbler, allowed it to steep there while he talked, and drew it out again by the string when he went away.
>
> The trace of tarnished copper, commonly called verdigris, poisoned the wholesome draught; a minute dose administered by stealth did incalculable mischief. Behold the results of this criminal homeopathy! On the third day poor Cibot's hair came out, his teeth were loosened in their sockets, his whole system was deranged by a scarcely perceptible trace of poison.

Dr. Poulain, Cibot's physician, could not understand his patient's symptoms. He analyzed his medicine but found nothing, for it happened that on that day Remonencq had become a little frightened and had omitted to dip the disc in the tumbler. The doctor then concluded that the sedentary life of the tailor, coupled with the unsanitary atmosphere which he breathed, had brought on an "incurable vitiation of the blood" which was "evident from the general anæmic condition."

Cibot dies and Remonencq marries the widow. After a time he leaves a verdigris potion where his wife may drink of it but, having been warned by a clairvoyant, Madame Fontaine, she cleverly changes the glasses and he falls into his own trap.

POISONING OF MADAME MARNEFFE.

Madame Valerie Marneffe[1] is one of Balzac's most unscrupulous women. Some critics maintain that she is the wickedest woman in fiction. Wife of Marneffe, she is at the same time mistress of Hulot, Baron under the Empire, Montez, the Brazilian slave-owner, Count Steinbock, the Polish sculptor, and Crevel, Mayor of an arrondissement of Paris, whom she afterward marries when widowed. Montez becomes convinced of Valerie's perfidy. One of his negroes has a mysterious animal poison which gives a disease more fatal than any vegetable poison and incurable anywhere but in Brazil. Montez contrives to give the disease to Valerie and her new husband and before he leaves France writes her of his vengeance. Bianchon and seven of his colleagues are called to treat the patients. Bianchon recognizes the malady as one known in Europe in the middle ages but which had become extinct there. Bianchon supposes the disease to be peculiar to negroes and the American races whose cuticle differs from the white races but he can discover no connection between his patients and the blacks or the copper-colored or half-breed races. Bianchon is about to try a powerful remedy but Valerie begs him to leave her to the Church. Valerie repents and, by willing her property to those she had wronged, tries to undo some of the mischief she had wrought.

CHEMISTS.

Balzac's chemists for the most part are rather mysterious persons who do not give out much information. More attention is given to Claes[2] and Vauquelin[3] (an historical character) than to the others. Duval,[4] Duvignon,[5] Japhet[6] and Rouelle[7] are of minor importance. At one time Duvignon (better known at a later date as Lanty) had Jaqueline Collin as a mistress. From him she is supposed to have acquired her knowledge of mysterious poisons.

The Quest of the Absolute is an account of a half-mad chemist who is in search of the Absolute—one element common to all substances but modified by a Unique Force. Balthazar Claes, a wealthy noble,[8] a pupil of Lavoisier, spends his time and his money experimenting in his laboratory, utterly neglecting his wife, family and finances. He dissipates his fortune and his family comes to want. Madam Claes, who is completely wrapped up in her husband, goes into decline (tuberculosis) because of sorrow and neglect but Claes is absolutely indifferent to her illness. He combines chlorine and nitrogen, discovers new metals and decomposes nitrogen as well as several other substances previously believed to be elements. Unexpectedly he obtains the diamond by the long continued action of the electric current through carbon-containing ma-

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[1] Cousin Betty.

[2] The Quest of the Absolute.

[3] The Rise and Fall of Caesar Birouteau.

[4] Cousin Betty. [5] The Deputy from Arcis. [6] The Wild Ass' Skin. [7] Ursule Mirouet.

[8] The Quest of the Absolute.

terials. After the death of his wife he continues his experiments and finally dies in the insane belief that he has discovered the Absolute.

APOTHECARIES.

There are but few apothecaries in The Human Comedy. Vermut is the best known.[1] "He was a little man with a headfull of scientific problems who used to come to the house with his cravat untied, his waistcoat unfastened and wearing a green jacket, usually stained." He lived in Soulanges, a small town in the provinces. Although better educated than his neighbors he was the butt of all the jokesters of his acquaintance. This was due in part, no doubt, to the gadfly of a wife who abused him at home and derided him in public; also in part to the dislike of Dr. Goudron, a physician who posed as a man of learning but who was in reality not much more than a taxidermist. Vermut was a clever chemist. He found traces of poison in the body of Pigeron which caused the widow of that worthy much uneasiness at her trial. Vermut was an innocent accomplice of Rigou in keeping Nicholas Tonsard out of the conscription. Rigou asked the apothecary for the name of a drug which had corrosive properties. Rigou presumably applied the substance to young Tonsard's finger, which then had to be amputated. Matifat[2, 3, 4, 5] is a rich, wholesale druggist who appears several times in the Comedy. He was a good-natured libertine who knew little of pharmaceutical science. Caesar Biroutteau[2] is a perfumer who had worked over into the manufacture of several toilet specialties. Bianchon gave him a formula for making a hair restorer containing hazel-nut oil. Biroutteau called the product "Cephalic oil." Vauquelin told him that it would not make the hair grow. Nevertheless his assistant went into the manufacture of the preparation and made a fortune.

SURGERY.

A hundred years ago surgery had already been called to the relief of the sightless. Madame Mignon[6] gradually lost her sight through excessive weeping over the death of a favorite daughter. The family had been wealthy but was now in straightened circumstances. Several years elapsed before an unexpected good fortune enabled Mme. Mignon to have Desplein come from Paris to Le Havre to make an examination.

> The illustrious member of the Academy of Science asked the blind woman ten short questions, while examining her eyes in the bright light by the window. Modeste, amazed at the value of time to this famous man, noticed that his traveling chaise was full of books, which he intended to read on the way back to Paris, * * *.

After the examination the Surgeon said that Madame Mignon would certainly recover her sight and fixed the date for the operation. A month later the operation was performed and in due time the patient could see.

A case of double amputation of the legs is mentioned.[9] Desire Minoret was in a coach accident and his legs were crushed. They were amputated but the young man did not survive.

CLAIRVOYANCE.

Balzac was a believer in clairvoyance but he associated mesmerism and somnambulism with it. Dr. Minoret[7] had no faith in the occult sciences. However, he consulted a clairvoyant on the advice of Bouvard, a friend of earlier years but with whom he had quarreled over the subject of Mesmerism. The clairvoyant pictured Dr. Minoret's house and garden many leagues away and told him exactly what was happening around his home: For example, what his ward, Ursule, was doing, thinking and praying; in just what volume in his library he kept his money for current expenses, and he learned for the first time that Ursule was falling in love with his neighbor's son, Savinien.

Madame Fontaine is Balzac's most noted clairvoyant. She appears on numerous occasions in the Comedy.[8, 9, 10] Her charges were 5 francs or 10 francs for reading the past and 100

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[1] The Peasantry. [2] Caesar Biroutteau. [3] A Bachelor's Establishment. [4] A Distinguished Provincial at Paris. [5] The Firm of Nucingen.

[6] Modeste Mignon.

[7] Ursule Mirouet.

[8] The Unconscious Comedians. [9] Cousin Pons. [10] The Deputy from Arcis.

francs for the future (*grand jeu*). According to Bixiou, "one-third the lorettes, one-quarter the politicians and half the artists" consulted her. She was assisted in her divinations by an enormous toad, Astoroth, with "eyes of topaz as large as 50 centime pieces" and an ebony-black hen, Bilouche. Gazonal[8] was greatly impressed by her, although he paid but 5 francs for a seance.

> Gazonal's bones were freezing; he seemed not to know where he was; but his amazement grew greater and greater when this hideous old woman in a green bonnet, stout and squat, whose false front was frizzled into points of interrogation proceeded, in a thick voice, to relate to him all the particular circumstances, even the most secret, of his past life; she told him his tastes, his habits, his character; the thoughts of his childhod; everything that had influenced his life; a marriage broken off, why, with whom, the exact description of the woman he had loved; and finally the place where he came from, his lawsuit, etc.

Somnambulism is occasionally mentioned by Balzac. A good example of this curious phenomenon is described in Maitre Cornelius.[1] In the later years of the fifteenth century this miser was treasurer to Louis XI. Enormous sums were stolen from the strong room and several of Cornelius' assistants were hanged, one after another, each protesting his innocence. Finally the King strewed flour over the floor of the strong room and set watchers at the door. They saw Cornelius go in the strong room late at night and the tracks in the flour corresponded to his shoes. The King's doctor explained that Cornelius was a sleep walker.

PHRENOLOGY.

Phrenology flourished in Balzac's time. Although we cannot be sure that he believed all the claims made by Gall and Spurzheim for their pseudo-science he makes frequent reference to it in his stories[2, 3, 4] and certainly gives it some credence.

HOMEOPATHY.

Concerning Homeopathy Balzac says little. The few allusions which I have found[5, 6, 7] are given more as illustrations of some theory which he is expounding than as proof that he believed in that system of medicine.

Balzac had some peculiar beliefs concerning the laws of heredity. One of these I believe to be untenable, although it is probably incapable of disproof. A century ago most marriages in France were arranged by the relatives of the contracting parties and the inclinations of the young people most concerned had little or no weight. Undoubtedly this system was responsible for the vast number of illicit love affairs in French society of that day. However, Balzac believed that this custom was better for society in the long run than the marriage-for-love system, such as is the general American rule to-day. Now it was Balzac's theory that the children of "love-marriages" had a much greater chance of being beautiful and clever[8] than those of parents whose marriages had been bargained for like the sale of property.

INSANITY.

Balzac describes insanity on several occasions by recording the actions and conversation of those afflicted. He knew that the disease might be brought on by excessive mental and physical strain, as in the case of the beautiful and unfortunate Stéphanie[9] at the crossing of the Beresina and the subsequent misfortunes of the Grand Army; also the laborer who went mad after a sunstroke.[10] In like manner Zelie Minoret, crafty and greedy, an accomplice of her husband in the theft of securities and destruction of a will, was made hopelessly insane[11] by the discovery of her crime and the sudden death of her only son, the result of an accident. By the same token others who undergo equal stress remain mentally sound. Count de Mortsauf, the husband of "The Lily of the Valley," is a pronounced hypochondriac.[12] He causes his wife much unhappiness because of his constant complaining.

Gaudissart[13] has a droll adventure with a lunatic at Vouvray in 1831. As a practical

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[1] Maitre Cornelius. [2] Old Goriat. [3] Ursule Mirouet. [4] Massimilla Doni. [5] Ursule Mirouet. [6] The Seamy Side of History. [7] Cousin Pons.

[8] The Two Young Brides.

[9] Farewell. [10] A Bachelor's Establishment. [11] Ursule Mirouet. [12] The Lily of the Valley.

[13] The Illustrious Gaudissart.

joke Viernier sends the illustrious drummer to a madman. As a result Gaudissart challenges Viernier. Neither knows how to shoot but one of the seconds suggests horse pistols loaded to the muzzle so that the kick would vitiate the aim. Viernier nearly kills a cow and the adversaries rush into each other's arms.

Consumption is a frequent cause of death in The Human Comedy,[1,2,3] probably because it was more prevalent a century ago than now. I have found no evidence to indicate that Balzac believed in its infectious properties, although he speaks of the "germ of disease" in one instance.

In "The Country Doctor"[4] there is a curious account concerning the effect which in rare instances tuberculosis may produce on the voice. Jacque, a peasant lad, is dying of consumption. The disease has altered the boy's singing voice and Benassis, knowing the value of rest in the treatment of that malady, has forbidden the patient to sing. On approaching the house the doctor and Genestas hear the lad singing in peculiar flute-like tones. "It is the Swan's Song," said Benassis. "That voice does not sound twice in a century to human ears. Let us hurry; we must put a stop to the singing. The child is killing himself." The doctor finds the boy exhausted and gives him a sedative to compel rest. After they had left the house Genestas made inquiries about the patient. Benassis replied: "Science cannot save him, unless Nature works a miracle. Our professors at the École de Médicine in Paris often used to speak to us of the phenomenon which you have just witnessed. Some maladies of this kind bring about changes in the voice-producing organs that give the sufferer a short-lived power of song that no trained voice can surpass."

Balzac knew that deficiency in diets caused disease. One day Bianchon spoke to Desplein[5] of a poor water carrier who had a horrible disease caused by fatigue and want. This wretched Auvergnat had had nothing but potatoes to eat during the dreadful winter of 1821. Desplein left all his rich patients and at the risk of killing his horse rushed off to the poor man's dwelling and had him removed to a hospital where he was cared for until cured.

Bleeding was a favorite treatment in the generation just preceding Balzac's time and was still relied on to some extent in his day. Balzac believed in its efficacy. Count de Mortsauf[6] was very ill with a fever. Dr. Deslandes bled him and saved his life. His condition remained desperate and for 52 days he was spared only by the faithful nursing of his wife and a friend of the family. Numerous other instances might be cited.

The use of leeches[6,7] is frequently mentioned in The Human Comedy.

Fever is a common symptom of the sick in The Human Comedy, but, since this is an accompaniment of so many diseases, it is usually not possible to diagnose the complaint from the records.

A number of the characters in the Comedy are pitted from the smallpox. One of these had been disfigured in childhood. Owing to her advancing years and her saint-like character the pitting almost disappeared.[8]

OBSERVATIONS ON DRUGS.

Opium.—Balzac frequently mentions opium, laudanum and "sleeping draughts" for the control of pain and induction of sleep, but I have found no mention of morphine. In many instances the opium is applied as an external application, sometimes the whole trunk being wrapped in the drug.[9] Vendramin is an opium smoker and the description of his sensations and dreams[10] while under the influence of the drug remind one of the "Confessions" of De Quincey. A victim of the enchanting drug, Vendramin died early.

Hashisch.[11]—"In these days the mysteries of the Witches' Sabbath so fully pictured by the great masters of the sixteenth century are mysteries no longer; the Egyptian sorcerers, male and female, progenitors of that strange race, the Gypsies of Bohemia, coming originally from India, simply made their victims eat hashisch. The phenomena produced by that drug amply explain the broomsticks of the witches; their flight up the chimneys; the *real visions* of old women

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[1] Another Study of Woman (Charlotte). [2] Cousin Betty (Elizabeth). [3] The Wild Ass' Skin (Gaudin; Valentine). [4] The Country Doctor.

[5] The Atheist's Mass. [6] The Lily of the Valley. [7] The Wild Ass' Skin. [8] The Village Rector.

[9] The Lily of the Valley. [10] Massimilla Doni. [11] Cousin Pons.

changed to young ones; the frenzied dancer and the entrancing music which filled the phantasmagoric dreams of those pretended worshipers of the Devil."

Coffee.—Balzac knew the sleep-dispelling properties of coffee. He prepared it himself and drank it excessively in order to lengthen his hours of toil. Desplein[1] relates that Bourgeat, his benefactor, ate bread smeared with garlic in order that his ward might have coffee to keep him awake while preparing for his examinations.

HYGIENE.

Hygiene, as we know it, had made no great advances in Balzac's time and he has left but few epigrams on health. A few are quoted:

> A man can resist a violent grief which kills a youth, less because his feelings are not so strong than because his organs are stronger.[2]
>
> The fashionable world expels every suffering creature from its midst, just as the body of a man in robust health rejects any germ of disease.[3]
>
> A man's health seldom suffers from the work he loves and does for its own sake.[4]

I am aware that there are some who will not read Balzac because they think him a salacious writer. They believe that he glories in describing the unbelievable depravity into which human beings may be sunk by their avarice and greed; that he delights in exploring the social quagmire of Parisian life and bringing to the surface the hidden, squirming reptiles of infamy and debauchery which it hides. I think these are misconceptions. Balzac portrayed French manners as he saw them. If society were decadent, immoral, remorseless, scheming and tottering on credit from the usurers, that was no fault of his. Such critics do not see behind Balzac's writings the great moral philosopher who pictures evils that he may warn the innocent and unwary; they fail to note the great preacher who points the way to forgiveness for sinners through sublime acts of sacrifice and self-abnegation; they do not appreciate the titanic intellect which ranged over every field of thought, garnering epigrams of wisdom from every science as a heritage to future ages.

ACKNOWLEDGMENTS.

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I am also indebted to numerous other works, such as biographies, essays, compendiums, etc. So far as practicable these are acknowledged herewith:

A. Cerfberr, and J. Christophe, "Compendium H. De Balzac's Comedie Humaine with an Introduction by Paul Bourget." Translated by Jno. Rudd, 1899.

Henry James, "Honore de Balzac" (Essay).

Harry Rickel, "Wisdom of Balzac," 1923.

Katherine Prescott Wormeley, "Balzac, A. Memoir," 1896. *Ibid.*, "Personal Opinion of Honore de Balzac," 1899.

Especial thanks are due to Mr. A. S. Mitchell and Miss Helen McKay for helpful suggestions in editing.

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[1] Atheist's Mass. [2] Béatrix. [3] The Wild Ass' Skin. [4] The Quest of the Absolute.

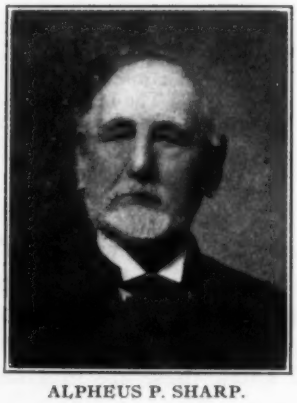
REMINISCENCES OF EARLY PHARMACY IN BALTIMORE.

BY DAVID M. R. CULBRETH, M.D.

Among the thirty well-established "Pharmaceutic Elders" of fifty years ago in Baltimore, 1877, whose friendships and conversations the writer later shared, only three set interviews pertaining to early conditions and experiences in the drug business have by him been preserved. These were filled in from notes taken at the hour,

J. BROWN BAXLEY.

M. JOSEPH MUTH.



ALPHEUS P. SHARP.

each subsequently submitted for possible correction, *and as such constitute the present article*—Mr. Muth, wholesaler; Mr. Sharp, manufacturer; Mr. Baxley, retailer.

M. Joseph Muth (1837–1898).—This gentleman was of composite stature, five feet six inches in height, weighing 160 pounds; roundish face, broad forehead, black hair, moustache and short full beard; alert, easy manners, deliberate action, and conversation filled with wise counsel and judgment; sustained low even voice; never visibly angry or irritated, placid, void of criticism—always placating that tendency in others; a steadfast friend enjoying confidences never to be betrayed, and establishing the belief that you were one of his chosen favorites—an innate quality that stimulated an interest in common humanity, and a contribution, wherever possible, of his generous nature and vast technical information. He was so sympathetic with young men—that they start life aright; with the strongest meaning of morality, industry and economy; his advice and counsel were a veritable inspiration. Owing to business demands he seldom attended college meetings, but held the institution in high regard and made to it liberal contributions.

"When I, a lad of thirteen, entered the wholesale drug house of Poplein and Thomsen, 1851, crude drugs of vegetable origin and dyestuffs were our leading commercial articles, and making fires, sweeping floors and weighing out drugs, but never wrapping or labeling them, were my chief duties. I continued with the firm and its direct successors, then recognized as the second largest in the city (Christian Keener holding first place), until 1884, when the corporation of Muth Brothers was formed. Our store was next to the present National Bank of Baltimore until 1856, when, being burnt out, we had to seek other quarters: 7 Hanover St., 8 S. Charles St., 26 Hanover St. and finally 56 German (now Redwood) St., 1859, in a new building erected by Mr. Thomsen especially for our purpose, and when we four brothers became more closely identified with the business.

After the fire many of the chemicals were found in fair condition, but with wrappers and cartons consumed; some bottles even cracked and oozing contents more or less charred, so that when Mr. Wood, the manager, asked me to clean up a certain pile of refuse those clerks standing nearby were seized with paroxysms of sneezing, owing to scattered veratrine—an experience that even yet lingers.

Chemicals were few in those days and alkaloids scarcely in any demand, but Rochelle and Epsom salts were quite popular—Baltimore being headquarters for the latter, and so listed in chemical and trade reports, Anne Arundel County being adjacent and furnishing magnesium clay of high grade, from which the salt was manufactured extensively in our city. Only a few patent medicines were in existence: Swain's Panacea, Hawks' Panacea, Brandreth's Pills and Wright's Pills being the four leaders. The most accredited retail drug store at that early period was Coleman and Rogers, 176 W. Baltimore St., just east of Light, 1891, whose semi-annual bills with us averaged $150.00, from which the profits must have been quite a thousand dollars. They were patronized by our best and wealthiest families, stood high personally, lived well, drove fast horses and were looked upon by the trade in every respect as *bon ton*.

The next prominent store was that of Andrews and Thompson, 5 E. Baltimore St., whose semi-annual bills with us amounted to $100.00, and thereafter in importance came: Mackenzie, Laroque, Graham, Littlefield and Co., etc. Chemistry had some supporters but precious few followers, George W. Andrews and Charles C. Caspari standing at the head, although a little later Dr. William E. A. Aiken, professor of chemistry in the University of Maryland, enjoyed even greater prominence. My uncle, a skilled musician, was requested to design a church organ and to attend its initial trial, when he readily detected false notes caused by other metal than zinc entering into the composition of the pipes. The recognized best local analyst, George W. Andrews, was sought, who, from slight scrapings of each pipe, found only two of pure zinc—the others, largely lead. So, as a fact, in the not very remote past the pharmaco-chemist had higher recognition than that accorded to-day to the mere compounder of prescriptions.

In the 50's and 60's the powdering of drugs involved much labor for retail and wholesale druggists, as it had to be done by hand, there being no specific machinery. Our two large mortars were kept in continuous service—one of iron, two feet high, $1^1/_2$ feet in diameter, 3–4 gallon capacity, with a solid iron pestle, four feet long and 1 inch in diameter, enlarged at the lower end to 3 or 4 inches, and employed chiefly in reducing ergot, rhubarb, bayberry, etc., using mostly a vertical motion; the other of marble, broad and shallow, the bowl 3–4 gallon capacity—the lower portion of the pestle being marble—conical shape, rounded base, 6–8 inches in length and breadth, joined to a long wooden rod whose upper end passed through a hole in the ceiling, the operator having simply to give the pestle a swinging rotary motion, when by contusion or trituration substances like acacia, borax, ammonium chloride, etc., could readily be reduced. The first drug mill, Spencer-Thomas pattern, was used here in 1865, but only for bruising—not powdering. The **Pulvis Glycyrrhizæ Compositus** became popular in the early 70's, and owing to the fixed oil in fennel seed was very troublesome to prepare.

Business Decadence.—The decadence of the drug business in our city has been due to: 1, Jealousies and misunderstanding among our retail druggists, for as early

as 1855, at a called meeting, when a uniform price list was submitted and signed by all except Columbus V. Emich, J. Jacob Smith, and Henry A. Elliott (who even promised moral support and coöperation when practical)—scarcely a week had passed before William S. Thompson came into our store with the lament that Laroque, his near neighbor, was selling **Liquor Magnesii Citratis** at 25¢ instead of 40¢, as per list, as well as the inquiry—what action should be taken? This early infraction was the beginning of the end, as in a short time all were violating the letter of the schedule which soon led to disturbed confidence—a general distrust that has not decreased with years. Consequently, ever since then our pharmacists have been deprived of the efficiency in team work—each preferring to go independently along lines believed best for individual advantage; 2, Department stores have contributed a share of injury to the retail drug business—the first in our city being: Aikin's Dry Goods Store, which even in 1855 had a cut rate for Lubin's Extracts, Lowe's Soaps and all tooth brushes, the last two items prior to that date selling for not less than 25¢. As an offset to this innovation we strongly advised pharmacists to carry two grades, *cheap* and *expensive*, of all articles that shared in cutting, thereby giving patrons a choice according to price.

I think the advent of the 'drummer,' always so keen and aggressive towards selling, gave the initial impulse to 'cut rates,' for when merchants found that reduction drives on one or more articles attracted patrons, who often made other purchases at 'straight prices' resulting in profit, the custom was encouraged, only to become general and to develop the 'cut rate' store where everything is sold below normal. William H. Read gave us, 1862, our first 'cut rate' store (now, 1929, grown to a chain of thirty or more) of druggists' sundries and supplies, who, under the plea of selling out to visit Europe, reduced Hall's Hair Renewer to 75¢, thereby increasing its sale so enormously as to suggest the inclusion of other commodities, and finally everything, which resulted in abandoning his trip, owing to excessive business and prosperity. His store worried our druggists considerably, causing some to advise meeting his prices, and the majority to endorse a regular campaign towards convincing the public—*that all accredited drug store articles sold anywhere at irregular under rates were not genuine but spurious*—with the result that many persons thereafter patronized only the drug stores which maintained standard prices. Ferdinand Hassencamp, although an advocate of meeting all reductions, abstained for a time, as did many of his friendly pharmacists, but finally yielded and a short while later a lady came into his store wishing a bottle of Halls' Hair Renewer, who upon his naming its price, 75¢, boldly declared—she wanted the genuine, not a fraudulent substitute, and in spite of intelligent explanation became so excited as to refuse the purchase—hurrying out with a slam to the door.

Personal Decadence.—I attribute the weakening of the personnel in the business to the attraction it now offers, less than formerly, when in the absence of manufacturing establishments, it involved considerable technical experience and interesting chemical processes that required a high order of intelligence and training—all making for a social recognition which appealed strongly to quite a few young men with laudable birth and advantages. Stores were less numerous, sales and profits larger, while salaries seldom ranged lower than a thousand dollars per annum—quite sufficient to prevent unrest and continuous planning to start one's own business.

Edouard Ducatel might be regarded as the father of pharmacy in our city. He was a French refugee, educated at the École de Paris, and trained in pharmacy; he conducted for many years here, undoubtedly, the most professional retail drug store up to his period, where scores of young men of good families, habits and minds found attractive positions, learned the science of the art, and became sufficiently equipped to enter upon the study of medicine, or the practice of pharmacy under their own names. The privileges of clerks were far greater then, while physicians felt more kindly towards the druggist—whom they held as somewhat coöperative, visiting his store one or more times a day to give directions for preparing medicines for this or that patient, in the belief that they themselves knew more about such matters than the druggist himself—a possible fact in that day of pharmaceutic simplicity. Physicians, prior to Ducatel's time, made their own preparations in the office (*officinalis*), buying the crude substances from the druggist and having their own understudies prepare compounds by special directions—a practice that in the taking often enforced the patience of patients as well as language with staccato emphasis. In my early day I recall that cholera was treated by annointing the entire body with blue ointment, possibly not without merit, but a cure which might be considered now—worse than the disease."

February 11, 1891.

Alpheus P. Sharp (1824–1909).—This gentleman was of the plain sturdy type, energetic, full size, weighing 175 pounds, 5 feet 10 inches in height; brownish moustache and stubby beard mixed with white; rather indifferent to dress, void of mannerism, free in speech and opinion upon subjects of his experience; at times with hurried movement and action, slightly blustery, inclined to emphasize small things, hesitating about larger ones. Lived simply in spite of means justifying indulgencies, possessed mental and mechanical originality; experimented in agricultural chemistry, fertilization, phrenology; contributed articles to pharmaceutical literature, occasionally attended college meetings and functions helpful to pharmacy in general.

"Our lecture course at the Maryland College of Pharmacy, 1841, was only one year of six months. Dr. David Stewart lectured on chemistry without using notes, but followed Bache in the Dispensatory and made his talks, for that is what they were, of little value, as he was a poor speaker with a bombastic style. He told us how to make copper sulphate, also a few other chemicals, and dwelt considerably on physics, his only piece of apparatus being a statical electric machine with which, after class, we amused ourselves beyond measure by taking *shocks*. William S. Thompson could stand any amount, but I very little; in fact, seemingly, I have never gotton over them. I corresponded with Dr. Stewart for some years after he left Baltimore, but I could make no sense out of his letters, as they indicated a mind filled with vagaries. Dr. Rush Roberts lectured on Materia Medica, reading his lectures which closely followed Wood in the Dispensatory. Thomas G. Mackenzie, Baltimore and Gay Sts., was the great moving spirit in establishing the College of Pharmacy, and gave us occasional talks in the absence of the regulars—all lectures were given in his little office, not larger than the hall of my home, to a class of six young men, one being Mr. Laroque's son, Emile, who did not come up for graduation, 1842, but three did and were successful. It was very easy then, for we had to know so little.

Our commencement was held at the Old Masonic Hall, St. Paul St., where the Court House now stands, and Robert H. Coleman (Coleman and Rogers) delivered

the address, which was fine, he being a remarkable pharmacist teeming with useful advice from his individual experience. A good account of it appeared next morning in *The Sun*, a copy of which I kept many years, but now is lost. William S. Thompson, several years before his death, 1894, showed me the copy he had kept all these years. In 1842, when 19 years old, I assisted Charles C. Caspari, then about 27, to open his drug store, 34 N. Gay St. (removed to 44 in 1849), as he could not speak English and knew only the German method of running the business, in consequence of which it devolved upon me for quite a while—to take absolute charge. I remained with him six years, becoming almost invaluable, when I opened (bought out Mr. James W. W. Gordon, 1849, who, several years thereafter, removed to Cincinnati and became a large manufacturer of glycerin, etc.) my own store, S. W. Cor. Howard & Pratt Sts., taking along much of Mr. Caspari's trade, thus giving me a good business from the start. Six or seven years later I took into my store Louis Dohme, who scarcely could speak any English, but quickly picked it up to perfection.

Mr. Caspari was great on decoctions and infusions, even brought over with him from Germany a Beinzan apparatus for preparing them. We also made in his store—extract of hyoscyamus, getting as much product as weight of drug taken. He knew all about chemical symbols and, no doubt, would have been a professor at the College, but for his English. Mr. George W. Andrews knew nothing of symbols, for I often asked him concerning them, H_2O, CO_2, etc., but he could tell very little of their meaning—he knew much less than people gave him credit for. The first question at graduation was: Give the composition of Dover's Powder, also doses of morphine, strychnine, etc. In the store we had an olive oil flask, in which Fowler's solution was prepared—this being our only home-made chemical solution."

November 10, 1894.

J. Brown Baxley (1814–1896).—This gentleman was of the rugged stocky type, 5 feet 8 inches in height and weighing 165 pounds; broad face and forehead, moustache, beard and hair blackish mixed with gray, nearly bald; somewhat contentious, critical of business trend and methods, aggressive in action and conversation, strongly defending his opinions and preferences—standing for fair play and honorable methods in trade; yielded to no one in pharmaceutic ability and technique; discussed freely his own improvements in various preparations, some being published and commended. Struggled effectively for reëstablishment of the College of Pharmacy, 1857, and served for years as its treasurer and on the Board of Examiners. He was much interested in Free Dispensary Service for the poor and needy.

"My father was a soldier at Fort McHenry when I was born, August 17, 1814, and three weeks later was most active in defending the city against the furious bombardment of the British, September 13th–14th, the occasion that inspired the famous *Star Spangled Banner*, and nearly cost him his life, as a shell falling at his side simply imbedded itself deeply in the earth without exploding. This, being two feet in diameter, he recovered sometime later and treasured it for years as did our entire family until, becoming my inheritance, it was presented to the Maryland Academy of Sciences.

I was named for both Generals Jackson (Andrew) and Brown, conspicuous in the War of 1812, so fancied myself destined for either the Army or Navy. But as an older brother had served an army post (Fort) where Chicago now stands, for a

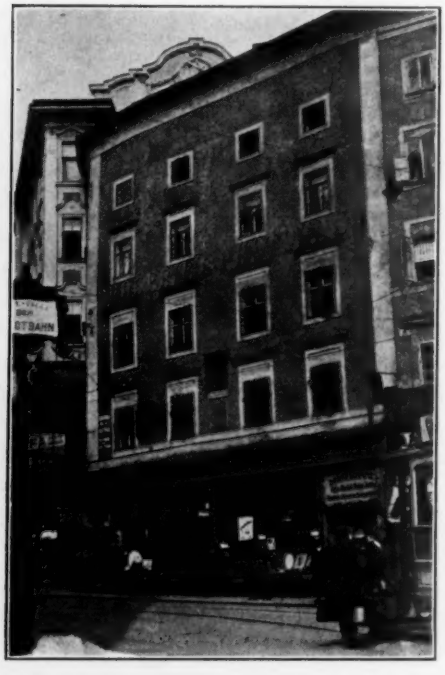
long time without any substantial worldly possessions, father vigorously opposed another son following the example. Consequently, through the mediation of another older brother, Dr. Henry Willis Baxley, then a prominent physician, surgeon and professor in the University of Maryland, with a wholesome influence among pharmacists, the drug business, much against my will, was selected for me. Dr. Baxley applied successfully in my behalf to Messrs. Tyson and Fisher, Baltimore St., opposite Hanover, who, in spite of recent establishment, enjoyed marked confidence of physicians and people—Mr. Fisher being a graduate of the Philadelphia College of Pharmacy, which then gave him not a little professional distinction and prestige. But as the position required four years of apprentice service without the slightest remuneration—the custom in Baltimore—father would not listen to its acceptance, whereupon Mr. Fisher advised my going to Philadelphia, where he had been trained—in the store of his uncle, Samuel Powell Griffith, who then needed a clerk and would contribute board, as was the practice there—a suggestion that met hearty approval. Thus, at sixteen, 1830, I began my pharmaceutical career in that city and after remaining four years and attending, without graduation, two courses of lectures at the Philadelphia College of Pharmacy, returned to Baltimore. Some time before going to Philadelphia I vividly recall father taking me to a reception given in honor of the then, or about to be, President, Andrew Jackson, at the Indian Queen Hotel, S. E. Cor. Baltimore and Hanover Sts., now (1891) occupied by Moore's store, and that father, in the rapidly moving procession of hand-shaking guests, called the President's attention to the fact: This lad is your namesake, only to cause the President to invite father for dinner at a slightly later hour. So, when that function was supposed to be nearly over, Dr. Baxley and I called on the President, who, as we were leaving, presented me with a silver medal, size of a half dollar, extended blessing and proffered a helping hand should it ever be needed.

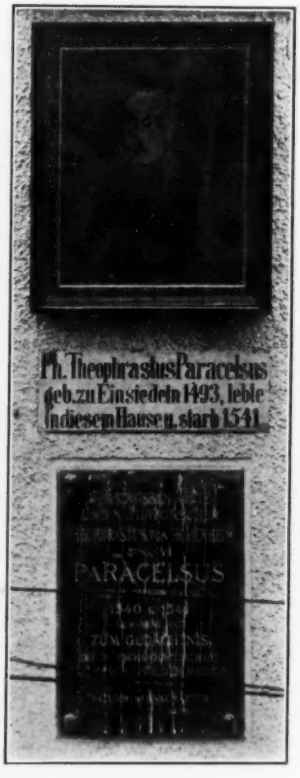
Shortly after returning to Baltimore from Philadelphia I entered into the drug business with Mr. Bennett, who lived only a year, when I disposed of the store and went to Mobile, Alabama, where, forming the drug firm of Baxley and Tilghman (a native of Queen Anne's County, Maryland) I remained eleven years, and when I not only experienced my first epidemic of yellow fever, having it myself in 1837, but, during convalescence, met my first financial loss—the destruction of our place of business in a conflagration that included half of the city. Being unable to reëstablish ourselves I took a clerkship until 1844, when, owing to the illness of my father, I returned to Baltimore, where the mere mention of having come from the distressed, fevered South, coupled with the surmise of conveying the deadly contagion (being a germ carrier) made people scan me with great apprehension and fear—a fact that actuated largely against my securing immediate employment. Some months later I was sought as temporary apothecary at the Baltimore General Dispensary, then fully established, a position soon made permanent and which I continued to hold uninterruptedly for ten years, when I was compelled to assume entire management of my own retail drug store, already established in 1852 and hitherto in control of a most reliable clerk, J. Jacob Smith, who found it to his interest to enter business elsewhere on his own account. Sometimes you see two retail drug stores in the same block, but very seldom two side by side, and this is how it happened here with me. My father, before I went South, bought this build-

ing, S. E. Cor. Howard & Franklin Sts., and, in spite of knowing nothing of the drug business, opened therein a retail drug store, having as partner Mr. Warner, a practical pharmacist, whose early death compelled father to sell the business, but not the building, to William H. Balderston, a highly reputable apothecary, who, with William Henck (well remembered by the writer, very deaf yet most reliable) as assistant—conducted the store for some years, and then disposed of it to Mr. James Perkins who still retained the invaluable Mr. Henck. Consequently, when the building came to me from father, 1850, and I desired it for establishing my own business, Mr. Perkins, being forced to move much against his will, went next door South, 136 N. Howard St., taking along Mr. Henck as head clerk and securing a little later Mr. Columbus V. Emich as a partner, who not only has become sole proprietor but still retains Mr. Henck—they both continuing to be my neighbors, active, healthy and popular."

June 16, 1891.

THE HOME OF PARACELSUS.





On the building above, extending over the front of the third floor is a sign, indicative of a drug and photo establishment. Over the entrance is a portrait and a plaque, shown in the adjoining illustrations, placed here by the German Medical and Scientific Society. Paracelsus lived in this building during the last years of his life and died here in 1541. Salzburg is an old city; it is the birth-place of Mozart.

PROCEEDINGS OF THE LOCAL BRANCHES

"All papers presented to the Association and Branches shall become the property of the Association with the understanding that they are not to be published in any other publication prior to their publication in those of the Association, except with the consent of the Council." —Part of Chapter VI, Article VI of the By-Laws.

ARTICLE III of Chapter VII reads: "The objects and aims of local branches of this Association shall be the same as set forth in ARTICLE I of the Constitution of this body, *and the acts of local branches shall in no way commit or bind this Association, and can only serve as recommendations to it.* And no local branch shall enact any article of Constitution or By-Law to conflict with the Constitution or By-Laws of this Association."

ARTICLE IV of Chapter VII reads: "Each local branch having not less than 50 dues-paid members of the Association, holding not less than six meetings annually with an attendance of not less than 9 members at each meeting, and the proceedings of which shall have been submitted to the JOURNAL for publication, may elect one representative to the House of Delegates."

Reports of the meetings of the Local Branches shall be mailed to the Editor on the day following the meeting, if possible. Minutes should be typewritten, with wide spaces between the lines. Care should be taken to give proper names correctly and manuscript should be signed by the reporter.

BALTIMORE.

The February dinner meeting of the Baltimore Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, which was held at the Emerson Hotel on Tuesday evening, February 25, 1930, was unanimously voted an enjoyable meeting by the fifty members and friends, including several from Washington, who attended.

As the Maryland oysters and other delicacies were served, S. Molinari, pianist, B. Kravetz, violinist, and Hugh B. McNally, soloist, entertained with several enjoyable selections.

Dr. Frank L. Black presided and presented Dr. Samuel L. Hilton, of Washington, D. C., who spoke on the subject, "Experimental Work on Witch Hazel."

Dr. Hilton reviewed the process of manufacture and tests for formaldehyde as outlined in the N. F. V, and then gave details concerning the experiments he had conducted, particularly with regard to the tests for formaldehyde. He stated that the test for formaldehyde as given in the N. F. V is not satisfactory, as it gives a decided reaction for Pinene, a normal constituent of witch hazel, and will be mistaken for formaldehyde. None of the samples he tested showed formaldehyde by the tests as given in the methods of analysis of the Association of Official Chemists.

Dr. Hilton expressed his wish to offer his paper to the new Committee on Revision of the N. F. VI for thorough study, and the recommendation that the test for formaldehyde be changed to one or more of the tests of the Association of Official Agricultural Chemists, as the present test gives an unfair reaction.

The second speaker was President George W. Colborn, Jr., of the Maryland Pharmaceutical Association, who had as his subject—"The Effect of Modern Business on Prescription Compounding."

Mr. Colborn recited his early experiences in the drug business, which included the powdering by hand of Gentian, the cutting of Vanilla Beans, the making of large quantities of pills and powders, tinctures, syrups, etc., now generally bought by the average druggist. He then compared these experiences with the trend of present-day pharmacy, and prophesied that two kinds of drug stores would likely be established—one the professional prescription pharmacy, and the other the commercial drug store. He also spoke concerning the necessity of better education for the physician in the art of prescription writing.

President Black then called on several members, including Messrs. S. Y. Harris, R. L. Swain and C. L. Meyer, who discussed their early experiences and the trend of present-day pharmacy.

Dr. A. G. DuMez, Dean, invited the Baltimore Branch to hold the March meeting in the new building of the School of Pharmacy of the University of Maryland.

B. OLIVE COLE, *Secretary-Treasurer.*

CHICAGO.

The 188th meeting of the Chicago Branch of the AMERICAN PHARMACEUTICAL ASSOCIA-

TION was held at the University of Illinois School of Pharmacy Tuesday, February 18th. This meeting was largely attended, there being about one hundred present. Special effort was made to have hospital pharmacists present by sending announcements to all of the hospitals in the city. The results obtained were determined by having all those present sign their names on cards followed by their particular line of work. This showed the group present to be made up of the following: Hospital Pharmacists 16, Registered Nurses 2, Salesmen 3, Wholesale Druggists 1, Dentists 1, Teachers in high schools 2, Retail Druggists 5, Biological and Pharmaceutical Chemists 4, Manufacturing Pharmacists 2, Pharmacists, not actively engaged at present 2, Teachers in pharmacy school 10, Students in pharmacy school, 38, Visitors 8 and unclassified 2.

The hospitals represented were as follows: Augustana, Miss Frances Douglas; Billings Memorial, Misses Elizabeth K. Neufeld and Hazel Willink and Mrs. G. P. Van Schaack (ex-Billings Memorial Pharmacist); Chicago State Hospital, H. F. Lindblade; Edgewater, Miss Anna Pusis; Englewood, Miss Mildred Irwin; Evanston, Miss Barbara Hynes; Frances Willard, Miss Rose Appelbaum; Illinois Masonic, Rex Fleming; Illinois Research, S. W. Morrison; Luthern Memorial, Raymond Wisler; Michael Reese, Irwin H. Becker; Mt. Sinai, Pae Churney; and Miss Ida Jacobson, N. N.; Presbyterian, Wm. Gray; University, Miss Mary F. Elliott; and Miss Edna C. Lester, R. N.

President Hynes opened the meeting and called upon the secretary to read the minutes of the last meeting; they were approved as read. He then gave a short history of the work of Dr. Abbott and the Laboratories. Following this he introduced the speaker of the evening, Dr. E. H. Volwiler, chief chemist for the Abbott Laboratories, who gave an illustrated talk on "New Remedies."

"Medicine and food have gone hand in hand throughout the centuries. Food of necessity has always been of importance and the use of medicine to allay pain has been 'second nature' to mankind for thousands of years. For many years crude drugs were used and it has been within the last hundred years that analyses of such drugs and syntheses of their active constituents have been carried on. To-day there is spent $500,000,000 for medicine annually. $300,000,000 of which are spent for some 50,000 patent medicines, many of which have had no real research work done on them. Also, some of our new medicines show a lack of coördination between real knowledge and the medicines themselves. For example, sodium barbital was thought to be a great improvement over barbital because of its greater solubility in water, yet it is known that the salt precipitates barbital in the acid of the stomach and then passes into the intestine where it is absorbed. Thus, though the sodium salt is more soluble in water, it presents no advantages when it is taken into the body.

"For study the potent medicines may be divided into classes in two ways, one the effect on the body and the other the source of the drug.

"Ephedrine was isolated and synthesized by American investigators in comparative late years, although the use of the drug ephedra was known thousands of years ago in China. In 1889, the alkaloid was isolated and used as a mydriatic. But nothing more was done with it until 1910 when investigations in the pharmacology showed that it was of importance in the treatment of asthma and hay fever. Now both the natural and synthetic products are on the market, the latter being sold quite extensively in France, but the natural is far the superior in effectiveness. Annually, there are 4,000,000 pounds of ephedra imported into the United States. This yields about 1% ephedrine. Thyroxin, an iodine-containing product of the thyroid gland was first isolated by Kendall who thought that he had discovered its structure. This was disproven by Harrington in 1926. He corrected the formula for it and then synthesized it. Chemically this drug is not as important as some other, such as insulin, for the same results that are obtained by the use of thyroxin can be obtained by the use of thyroid extract. Pituitary gland has been found to be very effective in the treatment of a surgical shock and in diabetes insipidis. Also the oxytocic principle is of material aid in the third stage of labor.

"Vitamine 'A' receives attention because of its use as an anti-infection agent, 'B' because of its importance in the treatment of pellagra and beri beri, 'C' because of its aid in attending to dental caries, 'D' whose use was thoroughly discussed at our last meeting, and 'E' because of its anti-sterility properties. Never-the-less, the study of vitamines has just begun.

"Sleep-producing drugs have increased greatly in the last few years until now there are

30,000 pounds or 40,000,000 doses of barbital alone used each year. Others in this group are adalin and sulphon-methane. In 1869 chloral hydrate or 'knock out drops' came into use, but it is deleterious to the heart. It was succeeded by the sulphon-methane group. These, in turn, were supplanted by veronal in 1904–1905. This latter was discovered by Fisher and is relatively non-toxic, not as habit-forming as many of the nuclei in preparing many other superior hypnotics, such as Luminal, which is more effective in epilepsy, but is more toxic, Impra, Neonal and Amytol. Amytol has two uses, one as a prophylactic and the other in anæsthesia when it is about an hour before the effect is wanted in local cases and in general cases injected without the patient being aware of what effect is to be expected. Sleep is produced and then ether may be used without the usual unpleasant effects. Following operation Amytol is used to kill the general post operation pain.

"Antibodies are of great use now, especially in diseases where none are developed in the body or in cases where those that do develop are not active enough.

"Chemical therapy has developed the use of Salvarsan, Arsphenamine, bismuth and gold preparations for specific uses in sleeping sickness of Africa, syphilis, etc. A tolerance is developed by the body after a period of use of one of these preparations so that that particular product ceases to kill bacteria or parasites when lethal doses are given. In such cases another form of the drug may be used and proper results obtained. An example is in the use of arsenic. Trivalent arsenic may give the expected results for some time. Then the body builds up a tolerance for it until it has no effect when administered. Pentavalent arsenic is then administered and again the patient yields to treatment. Arsphenamine is very easily decomposed and must be neutral when used. Neoarsphenamin is more stable and Sulphonarsphenamine is still more stable, but is not as effective generally. Hundreds of new arsenicals are now being used until it is estimated that there are 5,000,000 injections annually. The Rockefeller Institute has done a great work on arsenicals, such as Tryparsemide in the treatment of tertiary syphilis. Four or five years ago the University of Wisconsin developed the treatment of paresis by the use of arsenicals, with the results that in a year a hundred patients were able to leave the hospital and go back to their former occupations. Now improvements are being worked on in Africa. The relative use of arsenicals, bismuth and mercury compounds are as 10–7–4.

"In such countries as the Congo where whole populations are in danger of sleeping sickness, a great deal of research work has been carried on. Acriflavine and other dyes have not proven themselves of great value. In 1920, Bayer 205, a non-dye was produced. The manufacturers withheld true information regarding it. By studying the patents and by other research work Fourneau 309 was produced and this has been found to be identical with that of the hidden formula of Bayer 205. This has a therapeutic dose of but $^1/_{160}$ of the fatal dose, but results from its use are not as successful as hoped. In the treatment of cancer and tuberculosis chemical therapy has made little progress. Lead salts are used in cancer treatment and gold compounds in tuberculosis treatment, but diet and rest are of more benefit. Also there has been no satisfactory treatment for leprosy. At the present time there are about 3,000,000 lepers in the world and this shows no reduction in the last 100 years. The bacillus is coated with a waxy substance so that treatment is very difficult. Those who are hardy enough to take chaulmoogra oil yield to treatment, but many cannot undertake this system of curing the disease. At present hydnocaupic acid or chaulmoogric acid is used a great deal, but these need replacement and it is hoped that chemotherapy will furnish their substitutes. Plasmochin is now being used with quinine in the treatment of malaria, and it has been found to kill all forms of the parasite.

"Antiseptics are very widely used and in choosing one the aim is to obtain a product with as little negative results as possible. Sodium and potassium hypochlorites, while effective, are irritating and unstable. Dakin has improved them by the use of a boric acid buffer. The organic chloramines including chlorazene (water soluble), dichloramine T (oil soluble) and halazone showed marked developments in the manufacture of antiseptic. The latter is used to make water safe and is a boon to campers, tourists and the army. It acts as an antiseptic in as dilute a solution as $^1/_{200,000}$. Dyes are important as antiseptics for their advancement into tissue may be easily seen. Acriflavine has increased antiseptic properties when it comes in contact with blood serum. Phenol loses its antiseptic properties under similar

conditions. Mercurochrome depends on its mercury for the antiseptic value. Metaphen has a phenol coefficient of 500. Methyolate and other resorcinol derivatives have increased in importance in the last five or six years. Those from the ethyl to butyl group were first used, but now, due to Leonard, hexyl Resorcinol is of benefit in urinary antisepsis and the destroying of *B. coli*.

"The Chewing of Coca leaves dates back hundreds of years, but it was not until 1860 that the alkaloid, cocaine was isolated and it was not used in surgery of the eye until 1884. Novocaine and procaine have replaced it to a more or less degree, but the latter cannot be used on the surface. Butyn has the advantage in that it can be used on external surfaces and also used in injection. Tutocain and apothesine are two other developments of the last few years.

"The treatment of worms is of no great importance to those of the northern states, but to the southerner this has assumed a matter which requires much attention. Each type, such as hookworm, tapeworm, etc., must have a special treatment. The ordinary hookworm hatches from the ova in the soil from where it enters the human body through abrasions on bare feet. It enters the blood stream, goes to the lungs and throat and finally attaches itself to the lining of the intestine. Oil of chenopodium and carbon tetrachloride have been used advantageously in the treatment of it as statistics from a mine will show. Many employees were infected and after a treatment was given the efficiency of the workmen was improved 50 per cent. Tetrachlor ethyline is also being used with good results.

"Taken all in all, only a start has been made in the treatment of infectious diseases for of the fifty known diseases treatment is known for but 25 per cent of them and there are 12 organisms that are not even known."

Following the lecture a general discussion of "New Remedies" was participated in by Mr. Gray, Miss Appelbaum and several other members and guests.

President Hynes then introduced the President-Elect of the AMERICAN PHARMACEUTICAL ASSOCIATION and Secretary of the N. A. B. P., H. C. Christensen, who, in a few words, told of the job of interesting the retail pharmacist in the AMERICAN PHARMACEUTICAL ASSOCIATION and the hope that with the coöperation of friends and others interested in pharmacy the relationship between the two might be brought closer during his term as President.

The speaker of the evening, Dr. F. H. Volwiler was then given a rising vote of thanks for his most interesting talk.

LEWIS E. MARTIN, *Secretary.*

DETROIT.

The February meeting of the Detroit Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held Thursday evening, February 13, 1930 in the Y. M. C. A. Building. Twenty members and friends enjoyed the dinner which preceded the meeting; this number was swelled three-fold when meeting was called to order. In the absence of President Koelzer, Vice-President John Webster of the University of Michigan presided. The minutes of the January meeting were read by the secretary and approved.

Chairman Burniac of the Membership Committee reported the number of new members at 23, but hoped to double before the May meeting. The secretary reported for Dean Lakey of the Program Committee. The March meeting is to be given over to (Student Night) the Pharmacy students of the University of Michigan, College of City of Detroit and the Institute of Technology who will present the students' views on the future of pharmacy.

Dean Kraus, of the Pharmacy Department of the University of Michigan, invited the branch to Ann Arbor for their "Annual Treat," the May meeting, to be held in the Chemistry Building of the University, preceded by dinner to be held in the new Women's League Building. Dr. D. L. Tabern is to be the speaker of the evening.

Vice-President Webster, proceeded with the program by presenting the speaker of the evening, Fred Ingram, who gave a most interesting talk entitled "Merge, Submerge or Immerge, Which?"

Mr. Ingram brought out the many possibilities of the independent druggist who thinks and does things. He spoke of the many opportunities for the individual taking advantage of the National pharmacy movements, such as First Aid Week and Pharmacy Week, whereby millions of dollars in publicity is given for the benefit of the individual druggist. The opportunity is there, but the individual must get the most out of these movements by coöperation.

Mr. Ingram said window displays with a personal touch will do it. He gave two splendid illustrations of "First Aid Week" windows,

that will pay big dividends, *the first:* Place a boy scout in the window demonstrating first aid. *The second:* Placing two medicine cabinets in the window, one the average untidy, unkept medicine cabinet and the second neat and complete in arrangement to meet every first aid need, with two central signs one reading "Does Your Medicine Cabinet Look Like This?" *Second,* "Your Medicine Cabinet Can Look Like This." The results are bound to be fruitful and worth the effort.

He said further that the independent druggist must stop worrying about yesterday and think of to-morrow; stop worrying about the chain stores; instead, profit by their experience and adopt modern methods of display and merchandising. Too many druggists think that in buying power there is strength, when in reality it is selling power that spells success. Mr. Ingram urged the members to practice salesmanship by suggestive selling, make companion sales, rather than be "Mere Robot." He asked, "Why pay clerks salary when a Robot will dispense the article needed, neatly wrapped, return the correct change and say thank you?" Some clerks don't even do that, but to be successful they must do more—be alert to the situation.

A general discussion followed led by Messrs. Webster, Kraus, Burniac and Weaver. This discussion brought out many points of interest regarding the future of the independent druggist. In fact, a successful future was predicted for the druggist who looks to the to-morrow and forgets yesterday.

The speaker was given a rising vote of thanks.

BERNARD A. BIALK, *Secretary.*

NEW YORK.

The February meeting of the New York Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was held at the College of Pharmacy, Columbia University, on Monday, the 10th, the chair being occupied by the President, Mr. Robert R. Gerstner.

Chairman Robert S. Lehman, of the Committee on Education and Legislation, presented his report. In regard to Federal Legislation he stated that the Capper-Kelly Bill, H. R. 11, was on January 27th favorably reported on by the House Committee on Interstate and Foreign Commerce and by unanimous vote the new title of the bill would be "Resale Price Bill." He reported that the Williamson Bill, H. R. 8574, had passed the House and was in the Senate. This bill transfers certain functions of the prohibition enforcement from the Treasury Department to the Department of Justice. It is being opposed by the drug and chemical trade and the producers and users of industrial alcohol.

With reference to State Legislation he reported that the bill providing for the elimination of geographical limits for Licensed Druggists had been introduced the previous week in the Assembly and Senate. It is being strenuously opposed by the New York State Pharmaceutical Association and all local pharmaceutical organizations. The suit to test the Pharmacy Ownership Act in Erie County has not as yet come to trial; it will be opposed by the New York State Board of Pharmacy as well as the New York State Pharmaceutical Association with the National Association of Retail Druggists acting as *amicus curiæ.*

Dr. Hugo H. Schaefer, having been requested at the previous meeting to submit his suggestions regarding Student Membership, read his resolutions which were voted upon and carried by the meeting.

Mr. Reginald Dyer, Chairman of the Committee on the Progress of Pharmacy, read a list of some Newer Remedies and gave interesting abstracts of the following subject, "Dental Caries and Its Connection with the Calcium Content of the Saliva;" "Stability of Extracts of Ergot and Methods of Standardization of Ergot."

Max Bachrach was introduced by the president as the speaker of the evening.

The title of his paper was "The Application of Science to the Fur Industry." Mr. Bachrach began by tracing the history of the industry from its earliest days up to the present time; he then classified the fur-bearing animals zoölogically, and with the aid of slides from the U. S. Department of Agriculture, showed the different types of animals and furs obtained from them. He dealt with the application of the microscopy of fur fibers to the industry, showing how the development of this subject, upon which he has spent much time, will be of considerable help in the determination of the type of animal from which the fur has been obtained. Many slides were shown illustrating this subject. He then traced the production of fur garments from the trapping of animals, through the hands of the dresser and the dyer, to the furrier and from him to the wearer.

There was a good attendance at the meeting and an interesting discussion followed the

lecture. A rising vote of thanks was accorded to Mr. Bachrach.

HERBERT C. KASSNER, *Secretary.*

UNIVERSITY OF NORTH CAROLINA.

At the thirty-first meeting of the University of North Carolina Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, held in Pharmacy Hall on January 29, the following officers were elected for the ensuing year: *President,* L. G. Barefoot, Four Oaks; *First Vice-President,* B. B. Forrest, Hillsboro; *Second Vice-President,* C. B. Clark, Jr., Williamston; *Secretary-Treasurer,* H. M. Dellinger, Stanley.

The thirty-second meeting was held on February 12th. At this time Prof. J. G. Beard, of the University School of Pharmacy, assisted by Miss Alice Noble, gave an illustrated lecture on the "Men Who Have Contributed to the Origin, Development and Growth of the North Carolina Pharmaceutical Association." In his opening remarks the speaker outlined the events that led up to the formation of the North Carolina Pharmaceutical Association on August 11, 1880. He then showed a very interesting collection of lantern slides which included pictures of the past officers of the Association. As each picture was displayed the lecturer gave a brief statement of the service the officer had rendered to the organization and to North Carolina pharmacy.

The thirty-third meeting of the branch was held in Pharmacy Hall on the evening of February 26th. Dr. W. C. Coker, head of the Department of Botany of the University, delivered an address on "Organic Evolution." He stated that the seven factors involved in the process of evolution are: time, variation, over-production, selection, struggle for existence, survival of the fittest and heredity. These factors were clearly illustrated with lantern slides showing progressive evolution in plant and animal life. Dr. Coker developed his lecture from the lowest form of plant and animal life to that of the highest, finishing his talk on the origin of man and a brief history of the work of Darwin.

NORTHERN OHIO.

The February meeting of the Northern Ohio Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION was called to order by President Benfield at a dinner meeting, held at Fenway Hall, February 14, 1930. Waldo M. Bowman, of Toledo, Ohio, was present as guest and speaker for the evening. The Council of the Branch held an open meeting during the course of the dinner and heard the reports of committees. The Program Committee reported that Dr. K. K. Chen, of Eli Lilly and Company, had accepted their invitation to address the Branch on March 13th.

After adjournment of Council, Dean Spease introduced Mr. Bowman, who presented an interesting paper on Ethical Pharmacy.

Mr. Bowman outlined the evolution of the pharmacist from the time he was the source of supply for all types of drugs and medicines which he collected from all parts of the earth to the present day of intense commercialism in the drug trade. Little attention is paid to the professional side of pharmacy in the great majority of stores and in the opinion of Mr. Bowman modern pharmacy will resolve into two phases, the commercial phase and the ethical phase. Then, and not before, will professional pharmacy come into its own and its votaries be the successor indeed of "Ye Apothecary" of the olden time.

Mr. Bowman states that ethical pharmacy is the buffer between the physician and the public and that pharmacy which has the confidence of both physician and public is an asset to the community in which it exists. There is to-day in modern business a definite place for ethical pharmacy and a need for schools to train men along highly specialized lines to carry on its work.

In concluding his talk Mr. Bowman discussed in detail the items to be handled by the professional pharmacist, the value of proper advertising and his code of ethics.

The following officers were elected at the December meeting for the ensuing year:

President, H. F. Benfield, 15709 Clifton Boulevard; *Vice-President,* Edward Spease, 3051 Scarborough Road; *Secretary,* Franklin J. Bacon, 3550 Avalon Road; *Treasurer,* Paul R. Hudson, 3131 Washington Boulevard.

Policy Committee, **Chairman,** A. B. Ejbl, Edward Spease, F. J. Cermak, A. L. Flandermeyer, J. T. Matousek. *Program Committee,* **Chairman,** Edward Davy, L. P. Miller, A. E. Walleck. *Council Members—Term Expiring December, 1933:* Herbert Decker, Emil Petersilge, Joseph Matousek, Andrew Walleck.

PHILADELPHIA.

The regular monthly meeting of the Philadelphia Branch of the AMERICAN PHARMACEUTICAL ASSOCIATION, was held in the P. A. R. D. Building, Tuesday evening, February

the eleventh. President Hoch occupied the chair.

The report of the secretary-treasurer was presented and accepted. President Hoch appointed an auditing committee and announced that the committee on nominations would be appointed later. He then stated the purpose of the meeting and presented the speaker of the evening, Professor E. Fullerton Cook, Chairman of the Committee on Revision, U. S. P. X.

Professor Cook first briefly outlined the history of the U. S. P. and explained the part played by the physicians and pharmacists in the revision of the U. S. P. VIII, U. S. P. IX, and U. S. P. X. Many very interesting details relative to the revision of the U. S. P. X were described, which gave the members an excellent idea how the various problems were studied and how conclusions were reached. He stated that some preparations were not admitted to the U. S. P. X because of complex formulas; others were not admitted because some other or better form was official. He stated that of the 376 titles deleted from the U. S. P. IX and U. S. P. X, 208 were admitted to the National Formulary.

During the past year Professor Cook has been actively engaged in making a scope survey with the hope of securing valuable data which may aid the coming Revision Committee. To secure this data hundreds of questionnaires have been mailed to physicians and pharmacists throughout the United States. The questionnaire contains a list of drugs, chemicals and preparations official in the U. S. P. VIII and U. S. P. IX but not admitted to the U. S. P. X. Physicians and pharmacists were asked to study the questionnaire very carefully and then indicate the number of times there was professional demand for the products named in the list. It was suggested that at least 300 prescriptions be studied but if possible 500 or 1000, in order that the results may be more conclusive. Professor Cook stated that a great number of these questionnaires have been returned by both physicians and pharmacists, but a complete check has not been made, because of the enormous amount of work involved in the study. Results, however, seem to indicate that there are a number of useful drugs and preparations commonly used which were not admitted to the U. S. P. X.

At the conclusion of Professor Cook's discussion and valuable presentation of statistics the members joined in a discussion of the various pharmacopœial problems. The question of how the Pharmacopœia can be made more useful to the physician was discussed at length. Various ideas were expressed relative to how the physician can learn of the therapeutic usefulness of many U. S. P. products. In the expressions of opinions the members agreed that in general physicians know little about the U. S. P. and the therapeutic properties of its many useful preparations. This is a serious problem and some way should be devised to correct it if the Pharmacopœia is to retain its usefulness.

FRANK H. EBY, *Secretary.*

NORTHEAST MISSISSIPPI DRUGGISTS' ASSOCIATION.

The February meeting of the Northeast Mississippi Druggists' Association was held at the School of Pharmacy of the University of Mississippi on February 18th. The program began at 10:00 A.M. when the druggists assembled at the Chemistry-Pharmacy Building to start on a tour of the campus, including the new buildings.

Having completed the tour of the campus the druggists were shown a number of specially arranged exhibits, among these being an exhibit illustrating how glass bottles are made, where cork comes from and how it is prepared, and some of the products made from the by-products in the manufacture of cork stoppers. In addition an exhibit of the various pharmaceutical journals and an exhibit of plans and equipment for the modern drug store were shown. Apparatus recently obtained for the pharmacy laboratory was on exhibit and included an emulsion machine, and an ointment mill which was in operation making sulphur ointment.

Prof. J. R. Simms, Jr., gave an interesting lecture on "Glandular Products Used in the Treatment of Disease," and Prof. W. W. Barkley showed an interesting collection of medicinal plants native to Mississippi which have been collected by the classes in pharmaceutical botany.

At 12:30 an excellent dinner was served at the Blue Goose Café in Oxford where several local physicians joined the pharmacists of Oxford and the visiting druggists and their wives. During the dinner members of the University High School Glee Club entertained with solos and other selections. Chancellor Hume extended a corial welcome to the visiting druggists in behalf of the University of Mississippi in a

speech in which he briefly reviewed the history of the University and told about its present development and of its expected future growth. Brief remarks were also made by Dr. P. W. Rowland, professor of Materia Medica, and Dr. J. N. Swan, head of the Department of Chemistry.

After dinner the druggists inspected the laboratories of bacteriology and physiology where numerous exhibits consisting of bacterial cultures and microscopic slides were on display. Immediately following this a business meeting was held which was presided over by the president of the association, Mr. F. W. Duckworth, of Booneville. Several new members joined the organization at this time. In regard to the proposed nuisance taxes being considered by the Legislature the many pharmacists present were unanimous in expressing the thought "Don't make us the goat—we don't mind just taxation, but don't make us tax collectors and stamp lickers." Among other resolutions passed was one favoring the establishment of a Pharmacy Corps in the United States Army. The secretary was instructed to forward this resolution to each member of the committee on Military Affairs of the United States Senate and House of Representatives, and recommending favorable action.

Following the business meeting Dr. Charles E. Wilson of Corinth, president of the Mississippi State Pharmaceutical Association, spoke on "What the State Organization Is Doing."

The meeting was concluded with an address by Prof. Elmer L. Hammond, Dean of the "Ole Miss" School of Pharmacy, "On a Trip to the Black Hills of South Dakota," which was illustrated by more than forty beautiful views projected by the school's recently acquired balopticon. Professor Hammond was a member of the House of delegates of the AMERICAN PHARMACEUTICAL ASSOCIATION and represented the Mississippi State Pharmaceutical Association at the annual meeting held last August in the Black Hills. Both Dr. Wilson and Professor Hammond discussed the approaching meeting of the AMERICAN PHARMACEUTICAL ASSOCIATION to be held at Baltimore, and the coming revision of the United States Pharmacopœia, the convention for which is to be held at Washington, D. C.

The March meeting of the Northeast Mississippi Druggists' Association will be held at New Albany on March 18th.

Roach Prescription Shop, Oklahoma City.—See October JOURNAL, 1929, page 1014.

For Tentative Program A. PH. A. Meeting, Baltimore, see page 298.

ASSOCIATION BUSINESS

AD INTERIM BUSINESS OF THE COUNCIL OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, 1929–1930.

Office of the Secretary, 10 West Chase Street, Baltimore, Md.

LETTER NO. 8.

March 4, 1930.

To the Members of the Council:

70. Election of Members. Motions Nos. 22 and 23 (see Council Letter No. 7, pages 184 and 185) have been carried and applicants for membership numbered 127 to 171, inclusive, and H-6 are declared elected.

71. Headquarters for 1930 Annual Meeting. President Dunning and Local Secretary Harris recommend to the Council that the Hotel Emerson be made the official headquarters for the Baltimore meeting. In case attendance is as large as now expected, it may be necessary to hold the banquet and possibly other entertainment features at near-by hotels. The official program will be submitted within a few days.

(*Motion No. 24*) *It is moved by Dunning that the Hotel Emerson be selected as the official headquarters for the 1930 meeting*

72. Life Membership. Dr. and Mrs. C. H. LaWall have become Life Members of the ASSOCIATION, the former by the payment of dues for 37 years and the latter through the payment of $25.00.

73. Applicants for Membership. The following applications properly endorsed and accompanied by the first year's dues have been received:

No. 172, W. C. Alston, Box 315, Checotah, Okla.; No. 173, Lexie Glenn Barefoot, Kappa Psi House, Chapel Hill, N. C.; No. 174, Howard J. Cannon, c/o Abbott Laboratories, North Chicago, Ill.; No. 175, C. B. Clark, Jr., University of North Carolina, Chapel Hill, N. C.; No. 176, James Donald Colborn, 626 Chestnut St., Pittsburgh, Pa.; No. 177, W. G. Conrad, East Bagley Road, Berea, Ohio; No. 178, Raymond E. Culbert, 110 William St., New York, N. Y.; No. 179, Bernard F. Daubert, 114 G Skybrook Apts., Craft Ave., Pittsburgh, Pa.; No. 180, Henry McLurd Dellinger, 806 Cameron Ave., Chapel Hill, N. C.; No. 181, Emanuel Fibus, 810 N. Negley Ave., Pittsburgh, Pa.; No. 182, B. B. Forrest, S. P. E. House, Chapel Hill, N. C. No. 183, C. Bernard Gifford, 630 Bank St., Bridgeville, Pa.; No. 184, Joseph Greenberg, 849 Highview St., Pittsburgh, Pa.; No. 185, Herman Halpern, 61 Mercer St., Newark, N. J.; No. 186, F. W. Keyser, 1301 W. Lafayette St., Detroit, Mich.; No. 187, George E. Kurtz, 6605 Detroit Ave., Cleveland, Ohio; No. 188, H. J. Mellen, 228 N. LaSalle St., Chicago, Ill.; No. 189, Carl Nielsen, 544 Ravine Ave., Lake Bluff, Ill.; No. 190, Leon W. Richards, 5234 University Way, Seattle, Wash.; No. 191, Roy L. Sanford, 1319 W. Main St., Enid, Okla.; No. 192, W. Thos. Seuseman, Jr., 2300 N. 6th St., Harrisburg, Pa.; No. 193, J. Norman Silsby, 271 Walker St., Cliffside, N. J.; No. 194, Sister St. Charles, St. Mary Hospital, Kankakee, Ill.; No. 195, David Spevock, 233 Marion Ave., Oakdale, Pa.; No. 196, C. A. Standfield, 7535 Ellis Ave., Chicago, Ill.; No. 197, George Stone, 631 Hastings St., Pittsburgh, Pa.; No. 198, John P. Striegel, 624 S. 7th Ave., Phoenix, Ariz.; No. 199, Abe Sussman, 9 Granville St., Pittsburgh, Pa.; No. 200, Eugene L. Sutherland, 6748 N. Ashland Ave., Chicago, Ill.; No. 201, Page Thompson, Swepsonville, N. C.; No. 202, H. C. Ulen, 15 Thirteenth St., Toledo, Ohio; No. 203, W. L. Walters, 3055 Brereton Ave., Pittsburgh, Pa.; No. 204, David B. White, 500 North 2nd St., St. Louis, Mo.; No. 205, Paul E. Wolter, 307 State House, Indianapolis, Ind.

(*Motion No. 25*) *Vote on applications for active membership in the American Pharmaceutical Association.*

E. F. KELLY, *Secretary.*

LETTER NO. 9.

March 15, 1930.

To the Members of the Council:

74. Headquarters for 1930 Annual Meeting. Motion No. 24 (see Council Letter No. 8, preceding) has been carried and the Hotel Emerson has been selected as official Headquarters.

75. Election of Members. Motion No. 25 (see Council Letter No. 8, preceding) has been carried and applicants for membership num-

bered 172 to 205, inclusive, are declared elected.

76. Tentative Program for the Seventy-Eighth Annual Meeting. With the approval of President Dunning, Local Secretary Harris and the Committee on Program of the Council, the Secretary submits the following tentative program. Secretary Christensen, of the N. A. B. P.; Chairman Jordan, of the A. A. C. P.; President Philip of the Conference of Pharmaceutical Association Secretaries; Chairman Swain of the Pharmaceutical Law Enforcement Officials; and Secretary Krantz, of the National Conference of Pharmaceutical Research, have approved those parts of the program which relate to these organizations.

TENTATIVE PROGRAM FOR THE 1930 MEETING OF THE AMERICAN PHARMACEUTICAL ASSOCIATION AND AFFILIATED ORGANIZATIONS, HOTEL EMERSON, BALTIMORE, MD.

Alumni Luncheons may be arranged for on Tuesday, Wednesday and Friday at noon.

MONDAY, MAY 5TH.

9:00 A.M. Second Meeting Council, A. PH. A.
9:30 A.M. National Association Boards of Pharmacy.
9:30 A.M. American Association of Colleges of Pharmacy—Executive Committee. Teachers' Conferences: Chemistry; Practical Pharmacy; Materia Medica, Pharmacognosy and Botany; Commercial.
2:00 P.M. National Association Boards of Pharmacy.
2:00 P.M. American Association of Colleges of Pharmacy.
6:00 P.M. Dinner, National Association Boards of Pharmacy.
6:00 P.M. Dinner, American Association of Colleges of Pharmacy.
8:00 P.M. National Association Boards of Pharmacy.
8:00 P.M. American Association of Colleges of Pharmacy.
9:30 P.M. Informal Dance.

TUESDAY, MAY 6TH.

9:00 A.M. Joint Session National Association Boards of Pharmacy and American Association of Colleges of Pharmacy.
1:30 P.M. First Session, House of Delegates, A. PH. A.
2:30 P.M. National Association Boards of Pharmacy.
2:30 P.M. American Association of Colleges of Pharmacy.
6:30 P.M. Banquet, AMERICAN PHARMACEUTICAL ASSOCIATION, followed by Dancing.

WEDNESDAY, MAY 7TH.

9:00 A.M. First General Session, A. PH. A.
2:00 P.M. First Session, Scientific Section.
First Session, Section on Education and Legislation.
First Session, Section on Commercial Interests.
First Session, Section on Historical Pharmacy.
6:00 P.M. Dinner, Kappa Psi Fraternity.
8:00 P.M. Second Session, House of Delegates, A. PH. A.

THURSDAY, MAY 8TH.

9:00 A.M. Third Meeting, Council, A. PH. A.
First Session, Conference Pharmaceutical Association Secretaries.
First Session, Conference Law Enforcement Officials.
Second Session, Section on Historical Pharmacy.
First Session, Section on Practical Pharmacy and Dispensing.
12:00 M. Luncheon, Veteran Druggists' Associations.
2:00 P.M. Second General Session, A. PH. A.
6:00 P.M. Dinner, Phi Delta Chi Fraternity.
8:00 P.M. Second Session, Section on Education and Legislation.
Second Session, Section on Commercial Interests.
Joint Session, Scientific Section and Section on Practical Pharmacy and Dispensing.

FRIDAY, MAY 9TH.

9:00 A.M. Third Session, House of Delegates, A. PH. A.
2:00 P.M. Second Session, Conference Pharmaceutical Association Secretaries.
Second Session, Conference Law Enforcement Officials.
Second Session, Scientific Section.
Second Session, Section on Practical Pharmacy and Dispensing.
7:00 P.M. Final Session, House of Delegates, A. PH. A.

8:30 P.M. Final General Session, A. PH. A., and adjournment.

10:00 P.M. First and Reorganization Meeting, Council, A. PH. A.

SATURDAY, MAY 10TH.

9:30 A.M. Boat Trip around the Baltimore Harbor, Luncheon on Board.

2:30 P.M. Dedication Exercises, School of Pharmacy, University of Maryland, to which all A. PH. A. members and friends are invited.

MONDAY, MAY 12TH.

9:00 A.M. First Session, Conference on Pharmaceutical Research.

2:00 P.M. Second Session, Conference on Pharmaceutical Research. Both of these sessions will be held at the New Willard Hotel, Washington, D. C.

The Fourth Symposium of the Genus Mentha will be held in Baltimore during the A. PH. A. Meeting.

(*Motion No. 26*) *It is moved by Kelly that the annual tentative program of the Seventy-Eighth Annual Meeting be approved by the Council.*

E. F. KELLY, *Secretary.*

COSMETICS LABEL BILL IN NEW YORK ASSEMBLY.

Labeling of cosmetics to deny the presence or arsenic, lead and anilin compounds, or of mercurials or phenol in excess of specified percentages is the requirement of an amendment (Section 335) to the public health law introduced in the New York State legislature by Assemblyman E. P. Doyle, Brooklyn. The bill would also require the label of a cosmetic to state the names, but not the quantities of the ingredients used in it, the name and address of the manufacturer, and the date of manufacture.

A. D. M. A. FAVORS KING BILL.

In a letter sent to Senator Lee S. Overman of North Carolina through its counsel, Horace W. Bigelow, the American Drug Manufacturers' Association declares that, with a few simple amendments, which it offers, the King Bill (S. 3084), providing for transfer of the function of detecting and prosecuting violations of the prohibition act, would "accomplish the desires of the proponents of the Williamson Bill (H. R. 8574) and be satisfactory to the legitimate users of alcohol."

The amendments, suggested by the Association, would provide (*a*) for the changing of the name of the Bureau of Prohibition in the Treasury Department to the Bureau of Industrial Alcohol, and the Commissioner of Prohibition to the Commissioner of Industrial Alcohol in the Treasury Department; and (*b*) the assignment to this bureau and its commissioner of those duties touching the issuance of permits to legitimate users of industrial alcohol.

OPPOSITION TO CHAIN STORE SPREAD CARRIED TO FLOOR OF CONGRESS.

Declaring that the "yeomanry" of the country would be destroyed unless there was a checking of the development of chain store merchandising, Representative Jones, of Texas, on February 20th, introduced into Congress a measure proposing that each state be given authority to prohibit chain store systems, or to regulate them as it sees fit.

The bill was ordered sent to the Judiciary Committee for consideration.

Introduction of the measure by Representative Jones signalizes the first occasion upon which opposition to the spread of the chain store system has been carried to the floors of Congress in the form of proposed legislation.

According to the terms of the bill, any person or corporation, operating a business in more than one state, would be subject to all other laws by which Congress supervises the conduct of business in the various states. It may be added that private monopolies are regularly dangerous to democracies. Individual dealers should form their combinations for the formulation of common policies, for the elimination of poor methods, and for the strengthening of those personal ties between seller and buyer that, after all, add much to the advantage of the individual distributor.

Chairman E. Fullerton Cook, of the U. S. P. Revision Committee, was a speaker at the March 10th meeting of the New York Branch A. PH. A. His subject was "The Pharmacopœia at Work."

EDITORIAL NOTES

Editor: E. G. EBERLE, 10 West Chase Street, Baltimore, Md.

Members of the Council, A. PH. A.: S. L. HILTON, *Chairman;* CHARLES H. LAWALL, *Vice-Chairman;* E. F. KELLY, *Secretary;* H. V. ARNY, A. G. DUMEZ, H. A. B. DUNNING, H. C. CHRISTENSEN, C. E. CASPARI, J. H. BEAL, W. BRUCE PHILIP, T. J. BRADLEY. *Ex-Officio Members:* D. F. JONES, *President;* A. L. I. WINNE, W. B. GOODYEAR, *Vice-Presidents;* C. W. HOLTON, *Treasurer;* E. G. EBERLE, *Editor of the Journal;* A. G. DUMEZ, *Editor of the Year Book;* R. L. SWAIN, *Chairman of the House of Delegates.*

Collaborators: The Members of the Council; E. FULLERTON COOK, *Chairman,* U. S. P. Revision Committee; E. N. GATHERCOAL, *Chairman,* N. F. Revision Committee; Chairmen of the Sections, A. PH. A.; H. A. LANGENHAN, GLENN L. JENKINS, H. C. NEWTON, DENNY BRANN, GEORGE D. BEAL; A. G. DUMEZ, *President,* A. A. C. P.; CHARLES B. JORDAN, *Chairman,* Executive Committee, A. A. C. P.; JOHN A. J. FUNK, *President,* N. A. B. P.; HENRY C. CHRISTENSEN, *Secretary,* N. A. B. P.

NEW AND NONOFFICIAL REMEDIES.

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

W. A. PUCKNER, *Secretary.*

EPHEDRINE-LILLY (See New and Nonofficial Remedies, 1929, p. 166).

The following dosage form has been accepted:

Ointment Ephedrine Compound: Ephedrine-Lilly, 1 Gm.; menthol, 0.65 Gm.; camphor, 0.65 Gm.; oil of thyme, 0.375 Gm.; lanolin, 5 Gm.; paraffin oil, 24 Gm.; white petrolatum to make 100 Gm.

EPHEDRINE SULPHATE-LILLY (See New and Nonofficial Remedies, 1929, p. 169).

The following dosage form has been accepted:

Lilly's Ephedrine Jelly: Ephedrine sulphate-Lilly, 1 Gm.; glycerin, 15 Gm.; tragacanth, 1.5 Gm.; eucalyptol, 0.1 Gm.; oil of wintergreen, 0.005 Gm.; oil of dwarf pine needles, 0.005 Gm., water to make 100 Gm.

VIOFORM - CIBA.—Iodochlorohydroxyquinolin.—$C_9H_4N.OH.I.Cl$.—A substitution compound of anachlor-ortho-hydroxyquinoline resulting from the introduction of one atom of iodine.

Actions and Uses.—Vioform-Ciba is used as an odorless substitute for iodoform.

Dosage.—Vioform-Ciba is used as a dusting powder for application to wounds, ulcers, burns, exudative skin eruptions, etc.

Manufactured by the Society of Chemical Industry in Basle, Switzerland (Ciba Co., Inc., New York). U. S. patent 641,491 (Jan. 16, 1900; expired). U. S. trademark 92,732.

Vioform-Ciba is a grayish yellow, odorless powder, almost insoluble in water, sparingly soluble in alcohol, soluble in hot glacial acetic acid.

Boil vioform-Ciba with dilute hydrochloric acid: it dissolves slowly, evolving an odor of iodine. Treat a specimen of vioform-Ciba with concentrated sulphuric acid: copious vapors of iodine are evolved. Repeatedly crystallize vioform-Ciba from hot glacial acetic acid: crystals are obtained which melt at 178 to 180 C.

Mix about 0.5 Gm. of vioform-Ciba, accurately weighed, in a nickel crucible with a mixture of powdered sodium hydroxide 4 parts and potassium nitrate 1 part, and heat until fusion has been completed. Cool and dissolve the fused mass in 150 cc. of water, warming to hasten solution; filter into a 400-cc. beaker and wash well. Add 25 cc. of tenth-normal silver nitrate (the amount of silver is k in the formula below); then add slowly, with stirring, nitric acid until acid in reaction to litmus paper. Filter the solution through a weighed Gooch crucible, wash and titrate the excess silver nitrate in the filtrate with tenth-normal potassium sulphocyanate (the amount of silver in the filtrate is a). The precipitate in the Gooch crucible (consisting mainly of silver iodide with some silver chloride) is further washed with 3 portions of alcohol, then ether, dried at 100 C. and weighed (w). The amount of iodine can be calculated according to the formula

$$x = \frac{0.7527w + a - k}{293}$$

where w equals combined weight of silver iodide and silver chloride; x equals weight of silver iodide and $(w\text{-}x)$ equals weight of silver chloride: by this method vioform-Ciba contains not less than 37.5 per cent nor more than 41.5 per cent of iodine, and not less than 11.5 per cent nor more than 12.2 per cent of chlorine.

I-X BARIUM MEAL.—A mixture of barium sulphate U. S. P., 85 per cent; native aluminum silicate, 10 per cent; malted milk (malt extract-milk powder), 5 per cent; with a trace of saccharin.

Actions and Uses.—I-X barium meal is used for roentgen-ray examinations.

Dosage.—I-X barium meal may be administered orally or by rectum. From 90 Gm. to 120 Gm. (3 to 4 ounces) are mixed with each 250 cc. (8 fluidounces) of water and agitated thoroughly.

Manufactured by the Industrial X-Ray Research Laboratories, St. Louis (Dick X-Ray Company, St. Louis, distributor). U. S. patent and trademark applied for.

MEAD'S POWDERED LACTIC ACID MILK NON-CURDLING, NO. 1 WITH DEXTRI-MALTOSE.—A modified milk product prepared by adding lactic acid, U. S. P.,

and a maltose-dextrin preparation to whole milk, heating, drying and powdering. Each 100 Gm. contains, approximately, protein, 18.3 Gm.; lactose, 25.5 Gm.; butterfat, 19.15 Gm.; ash, 4.22 Gm.; lactic acid, 1.75 Gm., and moisture, 1.50 Gm.

Actions and Uses.—Mead's powdered lactic acid milk non-curdling, No. 1, with dextri-maltose, is proposed for use in the feeding of infants when it is desired to prescribe an acidulated milk with a certain amount of added carbohydrate.

Dosage.—From 12 to 40 fluidounces of the normal dilution daily, depending on the age, weight and tolerance of the individual infant. To prepare the normal dilution, add to each $1^1/_2$ fluidounces of water 1 packed level tablespoonful of Mead's powdered lactic acid milk non-curdling, No. 1, with dextri-maltose and stir into solution with an egg-beater. This dilution contains approximately, protein, 3.32 per cent; carbohydrate, 10 per cent; butter fat, 3.48 per cent; ash, 0.78 per cent, and lactic acid, 0.32 per cent. The finished mixture has a p_H of 4.6 and each fluidounce has a nutritive value corresponding to approximately 25 calories.

Manufactured by Mead Johnson & Co., Evansville, Ind. No U. S. patent or trademark.—*Jour. A. M. A.*, September 7, 1929.

SOBEE.—A mixture of soy bean flour 67.5 per cent and barley flour 9.5 per cent, to which has been added olive oil 19.0 per cent, sodium chloride 1.3 per cent, and calcium carbonate 2.7 per cent. The approximate analysis of powdered sobee is: fat 22.50, protein 33.20, carbohydrate (barley and soy bean starches) 32.61, ash 8.51, moisture 3.18. The nutritive value of 500 Gm. is approximately equivalent to 2223 calories.

Action and Uses.—Sobee is used as a substitute in the diet of infants who are sensitive to the proteins of milk.

Dosage.—The normal dilution of sobee is used according to the age and weight of the child. The normal dilution is prepared by adding 1 ounce by weight (6 level tablespoonfuls) of sobee to 7 ounces of water and bringing to boiling temperature. This dilution represents approximately fat 2.81, protein 4.15, carbohydrate 4.07, salts 1.06. The p_H of this mixture is 7.2 and the nutritive value of 1 fluidounce is approximately equivalent to 17 calories. This is the average feeding, to which may be added 15 Gm. (1 level tablespoonful) of a suitable carbohydrate.

Manufactured by Mead Johnson & Co., Evansville, Ind. No U. S. patent. U. S. trademark 252,447.

Sobee is prepared by mixing soy bean flour 67.5 parts and barley flour 9.5 parts with a suitable amount of water and cooking; after cooking, olive oil 19.0 parts, sodium chloride 1.3 parts and calcium carbonate 2.7 parts are added; the mixture is homogenized, dried and then packed in hermetically sealed cans in an atmosphere of nitrogen. Its composition is determined by the usual methods of the American Association of Agricultural Chemists except for the fat, which is determined as follows: Approximately 1 Gm. of powdered sobee weighed accurately is placed in a flask; 9 to 10 cc. of water, 1 to 1.5 cc. of stronger ammonia water and 10 cc. of alcohol are added; the flask is shaken; 25 cc. each of ethyl ether and petroleum ether are added; the flask is then shaken and centrifugated at moderate speed for thirty seconds; the combined ether solution is poured off into a tared aluminum dish; the extraction with 10 cc. of alcohol and 25 cc. each of ethyl ether and petroleum ether is repeated and the combined ether solution again poured off into the same aluminum dish; the solvents are evaporated and the remainder dried to constant weight: the increase in weight represents the fat content of sobee.—*Jour. A. M. A.*, September 28, 1929.

BULLETINS OF THE DRUG TRADE BUREAU OF PUBLIC INFORMATION.

Under date of February 14th, Director Robert P. Fischelis issued *Bulletins* Nos. 1 and 2. These bulletins are invariably concerned with timely subjects related to pharmacy or other drug-trade activities, written in a way that informs the public on important subjects. Watch for these news items in the daily press and whenever your paper publishes the bulletins, wholly or in part, show your interest; thereby you will encourage the Drug Trade Bureau of Public Information. The first bulletin deals with the Williamson (H. R. 8574) Bill which has been discussed in several issues of the *N. A. R. D. Journal*, and in the October JOURNAL A. PH. A., 1929, pp. 1028–31. The second bulletin brings to general attention the suggestion of Dr. H. H. Rusby to preserve authenticated drug samples as records of research work, and may serve in checking up future research. (See December JOURNAL A. PH. A., 1929, p. 1222.)

We are taking advantage of the introductory of this year's bulletins by referring to an editorial in which "Science Conquering the Foes of the Body" was discussed and pharmacy and pharmacists given due credit by the *Dallas News*. *The Maryland Pharmacist* expressed its appreciation of the recognition, and liberty is taken in reprinting the greater part of its comment under the following caption.

AS A TEXAS NEWSPAPER VIEWS PHARMACY.

The Maryland Pharmacist: As a beacon light in a fog so the fundamental phases of pharmacy shine out in a day marked by trends and influences which seem to question the

validity of honest effort and worth-while pursuit. The soundness and intrinsic merit of the professional and scientific aspects of pharmacy will survive even the betrayal of those who will eventually cling to it in days of stress and storm.

We extend our congratulations to *The Dallas Morning News* for the clearness with which it views current conditions. In a recent issue it devoted an entire page of its editorial section to a discussion of "Science Conquering the Foes of the Body." It outlined the medical achievements of 1929; it discussed the causation of the influenza epidemic in 1928–1929; facts relating to the diagnosis and treatment of cancer were dealt with very intelligently, as well as the use of talking pictures, at a recent meeting of the American College of Surgeons, as an ally in the fight for health.

Of interest to pharmacists is the fact that more than half of the full newspaper page was given to an historical presentation and evaluation of the great part which the pharmaceutical profession has played in the development and dissemination of scientific truths. The names of many who have brought increased luster to the scientific world, and who were in every sense of the word pharmacists, are mentioned, and their place in history fixed by virtue of what they did. The article closes with these fine expressions:

"As before stated, we would not fail to include in the world's benefactors, especially in connection with the science of medicine, the men of pharmacy who have aided so greatly in that field of worthy endeavor. It is the careful work of competent pharmacists which makes the physician's prescription accomplish what he hopes for it to do. One can scarcely find another calling in which care and exactitude, knowledge and painstaking interest are necessary to a greater degree than in the work of the practical pharmacist."

The *Apotheker-Zeitung* also commented on the article noted and compliments the publication for its interest in pharmaceutical service and those who have rendered distinguished services.

ASSAY OF BELLADONNA LEAVES.

In the course of experiments on the effect of varying conditions of culture on the alkaloidal content of belladonna leaves—experiments which did not lead to any satisfactory conclusion—it was found necessary to work out a new method for the assay of the alkaloid in smaller quantities of material, as the official method requires 15 Gm. of dried material to be used. The modified method is as follows: A quantity of leaves is dried and ground to a 40 power. The moisture content (a) is determined on the product. Fifteen grams of the powder is shaken for one hour frequently and vigorously with 95 Gm. of dilute spirit. If only a smaller quantity is available, then n Gm. are shaken with $100\frac{1}{2}\,n$ Gm. of the spirit. After filtering quickly on the pump, the filtrate is weighed (b Gm.). It is then evaporated to about 10 Gm. and, after cooling, 10 drops of dilute sulphuric acid are added, with sufficient water to make the weight up to 20 Gm. The mixture is centrifuged, and the bright liquid weighed (c Gm). It is then shaken with 60 cc. of ether and 4 cc. of ammonia for one minute, 4 Gm. of powdered tragacanth added and shaken again. The large possible quantity of the clear ethereal solution is poured off (d cc.) and evaporated. The residue is dissolved in 3 cc. of ether, evaporated, dissolved in 5 cc. of alcohol, diluted with 5 cc. of water, and titrated with $N/25$ acid with methyl red as indicator. If e cc. of standard acid was used, then the alkaloid content of the water-free leaves was

$$\frac{13{,}872{,}000 \times e}{(100 - a) \times n \times b \times c \times d}.$$

E. I. van Itallie in *Pharm. Weekblad*, 66 (1929), through *Quarterly Journal of Pharmacy and Pharmacology*.

PREPARATION OF GLUCOSE SOLUTIONS FOR INTRAVENOUS INJECTION.

Chemically pure glucose only should be used. It must be sterile, free from starch, dextrin, lead, arsenic, oxalic acid and carbohydrate polymers of a caramel nature due to defective drying methods. Either anhydrous or hydrated pure glucose may be used, in their respective equivalents, to prepare the solutions of any prescribed strength; 1 part of anhydrous glucose = 1.1 parts of hydrated glucose. Ordinary distilled water should not be used to make the solution. It should be prepared as follows: Two distilling flasks are fitted in a series. The first contains tap water and a small amount of potassium permanganate. This is connected up with the second flask containing a solution of barium hydroxide. A condenser is attached to the second flask. With this apparatus very pure distilled water is obtainable. This should be used freshly distilled.

The solution obtained by dissolving pure glucose in the prescribed quantity in this distilled water should be clear. It may show a slight sediment on standing. It should, therefore, be allowed to stand for complete sedimentation, then filtered through a previously washed high-grade filter. The p_H of the filtrate is then adjusted to from 6.5 to 6.8, using small amounts of sodium carbonate or sodium phosphate solutions as necessary. The filtrate is then immediately weighed into clean injection flasks closed with sterile corks, capped with gauze and filter paper, and autoclaved at 15-lb. pressure for thirty minutes. The flasks are then removed, the corks securely pressed down, and capped.—C. D. Ingersoll in *J. Lab. Clin. Med.*, 15 (1929), 51, through *Quarterly Journal of Pharmacy and Pharmacology*.

PERSONAL AND NEWS ITEMS.

We are pleased to acknowledge copies of reprints from the University of Wisconsin of theses presented by our fellow members **Karl H. Rang** and **Glenn L. Jenkins,** in partial fulfillment of the requirements for the "doctor of philosophy" degree. It affords the opportunity of noting the work represented by the theses and to congratulate the University of Wisconsin upon the large number of bulletins, monographs, guides and circulars which have been issued, representative of its contributions to pharmacy. The names of the authors include names well and favorably known to pharmacy and as members of the AMERICAN PHARMACEUTICAL ASSOCIATION.

The thesis of Dr. Rang is entitled "An Anatomical Study of *Monarda Fistulosa* L.," and that of Dr. Jenkins "Phytochemical Studies of Datura Stramonium."

Mr. George E. Vincent, retiring president of the Rockefeller Foundation, will give the commencement address at the Medical College of Virginia, Richmond, on Tuesday, June 3rd. At this time approximately 190 will be graduated from the schools of medicine, dentistry, pharmacy and nursing.

The first Academy Medal, of the New York Academy of Medicine, was recently presented to Dr. Carl Koller, consulting ophthalmologist to Mount Sinai and Montefiore Hospitals, New York City, and the first man to use cocaine for local anæsthesia (in 1884).

Dr. Koller was born in Bohemia, in 1857, and received his Doctor's degree in Medicine from the University of Vienna, in 1882. He came to the United States in 1888.

W. S. Hubbard, formerly with the Food, Drug & Insecticide Administration of the U. S. Department of Agriculture, has resigned his position with the Baltimore Station and is now Chief Chemist for Schwarz Laboratories, New York.

Announcement has been made by **Roy B. Cook** of the West Virginia State Board of Pharmacy of a meeting of the members of the Boards of Pharmacy and members of the faculties of the Schools of Pharmacy, located in District Number Five, comprising, the two Carolinas, the Virginias and Tennessee. The time has been fixed as March 27th and 28th, and the place of meeting as Roanoke, Virginia, at the Patrick Henry Hotel. Prof. **W. G. Crockett** is chairman for the Colleges.

The date is set to follow meetings in District Number Two, so that President Funk and Secretary Christensen may be able to attend both meetings.

An interesting program has been arranged.

Levy G. Nutt has been appointed field supervisor of the Prohibition Bureau. The transfer was effected March 1st and Harry J. Auslinger, assistant commissioner of prohibition, was temporarily appointed to assume the duties formerly performed by Mr. Nutt.

Among other departmental changes announced by Secretary Lowman were the transfer of J. A. Manning, narcotic agent in charge at Nashville, to succeed George A. Cunningham as agent in charge at New York. Mr. Cunningham has been transferred to Nashville.

Under the auspices of the local chapters of Kappa Psi pharmaceutical fraternity, **W. Bruce Philip** of San Francisco and Berkeley, grand regent of all the chapters in the United States and Canada, will be the special guest at a dinner to be given in his honor Saturday evening, April 26th, at the Palace hotel in San Francisco.

The general committee is composed of chairmen of sub-committees, as follows: *General Chairman*, George H. Frates, past-president of the C. Ph. A.; *Arrangements*, C. R. Danielson; *Publicity*, Clarmond A. Perry; *Reception and Entertainment*, George F. Murphy; *Program*, John F. Cully; *Attendance*, Harlow E. Allen.

We are in receipt of a post card from **Dean C. W. Johnson,** who is now in the Philippines. He reports an enjoyable time.

Prof. Leo Suppan has been working to establish a drug museum in the St. Louis College of Pharmacy. He has collected a rare assortment of Chinese drugs, obsolete microscopical

and surgical equipment and old fixtures and containers. He hopes to collect the largest assortment of such materials to be found in the United States.

Each article shall bear a card, giving complete information concerning it, including the name of the giver or lender.

Emil Boerner presided over the Veterans' luncheon of the Iowa State meeting. Delegates to the U. S. Pharmacopœial Convention from South Dakota are: For the Association, Fred L. Vilas, Pierre; J. J. McKay, Pierre; Rowland Jones, Gettysburg. For the Division of Pharmacy, S. D. S. C.: E. R. Serles, Brookings; Karl Rang, Brookings; Floyd LeBlanc, Brookings.

Dr. Edward Kremers will preside at the 50th anniversary of the Wisconsin Pharmaceutical Association to be held in Madison.

Former President A. PH. A., **David F. Jones,** has been instrumental in the organization of South Dakota Association of Veterans; he was ably assisted by the Minnesota veteran, **H. C. Kruckeberg.** The initial meeting was held at Watertown.

Secretary Arthur G. Hulett, through the cooperation of Arizona Association, is doing excellent work in behalf of State and National promotions for pharmacy.

Secretary E. D. Oslin is issuing bulletins to Arkansas pharmacists stimulating their interest in behalf of legislative matters and in promotion of National and State affairs. The 48th annual convention of the State Association will be held in Hot Springs, June 10th–12th. George E. Schneck is the local secretary.

Lee S. Coy presented a valuable and interesting paper before Minnesota Pharmaceutical Association on "Increasing Prescription Practice with the Microscope."

In his address before Minnesota Pharmaceutical Association Secretary Christensen of the N. A. B. P., and President-Elect of the A. PH. A. said that "one of the biggest little mistakes drug stores have made in recent years was the removal of colored globes from the windows."

OBITUARY.

WILLIAM G. UNGERER.

William G. Ungerer, long recognized as an outstanding figure in the essential oil and perfume materials field, died on February 27, 1930, in his sixty-second year, following an illness of several weeks. He became a member of the AMERICAN PHARMACEUTICAL ASSOCIATION in 1918.

Mr. Ungerer was born at Rochester, New York, September 6, 1898. He was educated at École des Quatre Fils, Paris and Arts et Métiers, Paris. He was the first American to work as a student in the Grasse, France, perfume materials plants; in 1901 he incorporated the present firm of Ungerer & Co., succeeding his father, W. P. Ungerer.

Mr. Ungerer was the founder of the *American Perfumer* publication, and was a contributor of the many technical articles to this and other papers in the field; a joint founder of the Drug & Chemical Club, New York; a chevalier of the Legion of Honor of France, in recognition of his assistance to the French people during and after the World War; a director of the French American Chamber of Commerce. He is survived by a brother, Frederick H., vice-president and treasurer of Ungerer & Co., and two sisters, Mrs. Chas. P. Worth and Mrs. Walter E. Cosgrove, both of Westfield, N. J.

William F. McConnell, for thirty-five years secretary of the Drug and Chemical Section of the New York Board of Trade, died February 25th, in his home in this city, following a brief illness with pleurisy and pneumonia. He was seventy years old.

Dr. William H. Nichols, chairman of the board of the Allied Chemical & Dye Corporation and a former president and charter member of the American Chemical Society, died February 21st, of heart disease in a hotel in Honolulu, Hawaii. He had been ill two weeks. He was seventy-eight years old.

Dr. Nichols was born in Brooklyn, January 9, 1852, and was educated at the Brooklyn Polytechnic Institute at New York University, from which he was graduated in 1870 with the degree of bachelor of science, later receiving his master's degree.

Jokichi Takamine, Jr., son of the widely known Japanese chemist and president or director of a number of companies in this country, died February 22nd as the result of a fall from the fourteenth story of a New York hotel. He was forty-one years old.

Just before closing this issue of the JOURNAL we are advised of the death of **Harry B. Mason,** for many years active in ASSOCIATION work. A brief sketch will be found in the January JOURNAL for 1929, page 81. He became a member of the ASSOCIATION in 1896.

SOCIETIES AND COLLEGES.

ABSTRACTS OF PAPERS.

Because there is only another month before the Baltimore meeting the following is repeated:

Abstracts, preferably not over 100 words, should accompany all titles of papers when sent to the secretaries of the various A. PH. A. Sections. The officers ask contributors to send in their papers and abstracts in order to facilitate proper coöperation and enable the secretaries to have mimeographed copies of abstracts ready in advance of the meeting. Papers should reach the officers in time for action that may be necessary for giving them place on the program.

SECTION OFFICERS.

So that contributors of papers may have the address of the chairmen and secretaries before them, they are given here; a complete list of officers will be found on page X of the Advertising Section.

Scientific Section.—*Chairman*, H. A. Langenhan, % U. of Washington, Seattle, Wash.; *First Vice-Chairman*, E. E. Swanson, Indianapolis, Ind.; *Second Vice-Chairman*, W. J. Husa, Gainesville, Fla.; *Secretary*, L. W. Rowe, % Parke, Davis & Co., Detroit, Mich.

Section on Education and Legislation.—*Chairman*, Glenn L. Jenkins, Lombard and Greene Sts., Baltimore, Md.; *Vice-Chairman*, B. V. Christensen, Gainesville, Fla.; *Secretary*, Rudolph H. Raabe, Ada, Ohio.

Section on Practical Pharmacy and Dispensing.—*Chairman*, H. C. Newton, Omaha, Neb.; *Vice-Chairman*, Charles V. Netz, Minneapolis, Minn.; *Secretary*, E. O. Leonard, Pocatello, Idaho.

Section on Commercial Interests.—*Chairman*, Denny Brann, Des Moines, Ia.; *Vice-Chairman*, Jos. G. Noh, Omaha, Neb.; *Secretary*, Rowland Jones, Gettysburg, So. Dak.

Section on Historical Pharmacy.—*Chairman*, George D. Beal, University of Pittsburgh, Pittsburgh, Pa.; *Secretary*, J. T. Lloyd, Court and Plum Sts., Cincinnati, O.; *Historian*, E. G. Eberle, 10 W. Chase St., Baltimore, Md.

Progress has been made by the Section officers. We are taking the liberty of giving the titles of some of the papers for the Section on Historical Pharmacy:

"O. Henry and Pharmacy," by Charles H. and Millicent R. LaWall.

"Ex-Presidents of A. PH. A. from Baltimore," by David M. R. Culbreth.

"The Search for the Active Principles in the Narcotic Solanums," by F. B. Kilmer.

"Note on an Ancient Poisonous Plant of Asia Minor," by L. E. Warren.

"Alexander Nicolaus Scherer," by Edward Kremers.

"Benedict Arnold—Pharmaceutical Preparations and Samples Sold by Him," by R. D. Bienfang.

"Karl Wilhelm Scheele, the Apothecary Scientist of 18th Century, Sweden," by Lieut. Commander Louis H. Roddis.

"Notes on the Deceased Chairmen of the Revision Committee of the U. S. Pharmacopœia," by Drs. Viehoever, LaWall, Coblentz and Griffith.

"History of the U. S. Dispensatory," by H. C. Wood, Jr.

"History of the National Formulary," by W. L. Scoville.

"History of the Recipe Book," by J. Leon Lascoff.

BALTIMORE RETAIL DRUGGISTS' ASSOCIATION.

The annual meeting of Baltimore Retail Druggists' Association was held at Hotel Rennert, March 6th, President Samuel Y. Harris acting as toastmaster during the delightful function. The attendance was at par and the menu was served with the usual excellence.

A most interesting part of the program was an address by Governor Ritchie, of Maryland. It may be questioned whether any Governor has done more for pharmacy and with a purpose to serve the people. He has favored the School of Pharmacy of the University of Maryland, because he realized its importance, and appointed pharmacists to the State Board of Health because he deemed these services essential for public good. His views are expressed in action. He is looking forward to

the A. PH. A. meeting in Baltimore with helpful interest. Mayor Broening also was a guest and showed his interest by being present, even though he had just returned from Florida, where he had gone to recuperate from a serious accident.

Washington pharmacists were present in number, among them Chairman of the Council, S. L. Hilton.

President H. A. B. Dunning was present and expressed his appreciation of the Governor's remarks, and for the fine interest of the pharmacists which will make the Baltimore A. PH. A. meeting an outstanding success.

The Emerson Hotel has been named headquarters and arrangements under the direction of Local Secretary Harris are going forward nicely.

FOUNDERS' DAY AT PHILADELPHIA.

Founders' Day was celebrated and the annual mid-winter reunion was held at the Philadelphia College of Pharmacy and Science on February 24th.

The program was announced as follows: 3:30 P.M., address by Dr. Theodore B. Appel, secretary of the State Board of Health; 8:00 P.M., dramatic sketch dealing with the founding of the college, presented by a cast of faculty members and written especially for the occasion by Dr. and Mrs. Charles H. LaWall. Also on the program were music and readings of 100 years ago; dancing, quoits, bridge, five hundred and other games.

More than 500 alumni and friends were present at the afternoon and evening exercises.

GRADUATES OF CINCINNATI COLLEGE OF PHARMACY.

Cincinnati College of Pharmacy graduating students were visitors and dinner guests of the William S. Merrell Company yesterday afternoon. After a tour through the laboratories, the students were taken to the Cincinnati Club for dinner and entertainment.

Lee Wiltsee, secretary and treasurer of the company, introduced the Speakers, Charles G. Merrell, Thurston Merrell and Dr. Mortimer Bye. A Willis Sandman, President of the class, responded to Mr. Merrell's address. Dean Griess said that this is the first class to be graduated from the new college building, and also the first class to be graduated under the new three-year course. He remarked that the general tendency of the pharmacist to-day is toward professional specialization in filling and compounding prescriptions, and that the opportunities for the independent druggist were greater to-day than ever before.

DRUG-CHEMICAL DINNER HAS RECORD ATTENDANCE.

More than four hundred representatives of the drug, chemical and allied trades attended the fifth annual dinner held March 4th, at the Hotel Roosevelt, New York, under the auspices of the Drug and Chemical Section of the New York Board of Trade. The attendance totaled 436 persons, which was a gain over the attendance at the dinner a year ago. **Dr. H. Sheridan Baketel,** president of the American Pharmaceutical Manufacturers' Association, presided as toastmaster.

CHICAGO DRUGGISTS' POST OF THE AMERICAN LEGION ORGANIZED.

A meeting of the Chicago Druggists' Post No. 575 of the American Legion was held Tuesday, February 25th. Fifteen charter members and several visitors, including Bob Casey, district commander of the American Legion, and Jo Novotny, were present. Membership is to be restricted to drug store proprietors and registered or assistant registered pharmacists. Benj. Friedlander of 4335 Irving Park boulevard, was chosen as temporary finance officer. Thirty-two paid applications for membership were presented with the statement that a number of other eligibles were ready to join. G. E. Bond, of Mt. Vernon, Ill., suggests that the Chicago Retail Druggists' Post of the American Legion include any registered pharmacist in the state, associate memberships being issued to all eligible Illinois World War veterans outside of Chicago.

IOWA PHARMACEUTICAL ASSOCIATION.

Among the speakers of the Iowa convention were, Walter H. Cousins, Clyde Eddy, Carl Weeks, Governor Hammill. The banquet taxed the ball room—the largest attendance in the fifty years' history of the Iowa association. The guests of honor were Governor John Hammill and Mrs. Hammill, Carl Weeks, Douglas Malloch, Walter H. Cousins, Bernice Snider, Judge and Mrs. Lawrence DeGraff, Mr. and Mrs. Blake and many other state officers. George Judisch of Ames acted as toastmaster and introduced the speakers.

The officers of the Association are: *President,* Paul J. Jepson, Newton; *Vice-Presidents,*

John Heerema, Pella; E. L. Beezley, Cedar Rapids; J. S. Veenker, Northwood; *Treasurer*, J. M. Lindley, Winfield; *Delegate to* A. PH. A., George Judisch, Ames; *Legislative Committee*, George Judisch, J. J. Gillespie, H. E. Eaton; *New Member Executive Committee*, R. M. Gibson, Des Moines; *Delegates to U. S. Pharmacopœial Convention*, George Judisch, R. M. Gibson, B. A. Ruegnitz.

ALABAMA PHARMACEUTICAL ASSOCIATION.

Alabama Association members are going to have an outing this year, including a trip to Havana, Cuba, June 9th–13th. The cost for single passenger is $100.00, which includes railroad and steamer round trip; Pullman round trip; meals enroute in both directions (but does not include meals while in Havana) includes hotel accommodations at Sevilla-Biltmore, four nights in Havana; transfers to and from steamer in Havana; includes Cuban head tax, which is $3.00 per passenger.

LACKAWANNA COUNTY, PENNSYLVANIA, PHARMACEUTICAL ASSOCIATION.

The *Scranton Times* of February 7th gave an interesting account of the Lackawanna County Pharmaceutical Association meeting. There were 175 in attendance. The artist of the *Times* displayed skill in sketching quite a number of the officers and others present. Officers of the Lackawanna county group in attendance were: Frank P. Kelly, *President;* William W. Watkins, *First Vice-President;* Henry Brown, *Second Vice-President;* Thomas Evans, *Treasurer*, and Louis Gardier, *Secretary*. Credit for the success of the banquet went to the following comprising the arrangement committee: Henry Brown, Sr., *Chairman;* Andrew Brown, Louis Gardier, Mrs. Lula Morgan DeLucy, Thomas Evans, William Jenkins, John J. Davies William W. Watkins, D. J. Thomas, William H. Knoepfel, Peter F. Lally and John J. Mullen.

Andrew Brown acted as toastmaster. President O'Connell was among the speakers, also Henry Brown, D. J. Thomas, John J. Davies, William Knoepfel, A. P. Brown, Louis Gardier, Henry Brown, Jr., Percy M. Davis and Col. Frank P. Kelly. Ladies were in attendance and added greatly to the occasion.

FIFTIETH ANNIVERSARY OF THE JAPAN PHARMACEUTICAL SOCIETY.

The first general meeting in this year of the officials of the Japan Pharmaceutical Society was held on January 19th and was attended by the following persons: Dr. Takahashi, vice-president, Drs. Ikeguchi, Keimatsu, Uyeno, Nishizaki, Watanabe, Isono, Ogata, Tanii, Kinugasa, Nakao, Hattori and Mr. Hosoi. The proposal for holding a memorial ceremony at the 50th anniversary of the establishment of the society was discussed.—The *Weekly Druggist* (Japan), January 26, 1930.

LEGAL AND LEGISLATIVE.

H. R. 10561, BY MR. HAWLEY, DISPLACES H. R. 9053, BY MR. PORTER.

H. R. 9053 and comments thereon were printed in the February JOURNAL A. PH. A. (see pp. 205 and 165). The bill presented by Mr. Hawley has been accepted by Mr. Porter; it has the same title "To Create in the Treasury Department a Bureau of Narcotics, and for other purposes." This Bill does not provide for a Commission, but makes the Narcotic Division of the Public Health Service responsible for determining the quantities to be imported for medicinal purposes. Mr. Porter will not ask for consideration of H. R. 9054 until after a conference with pharmacists and others interested has been held. Hearings were held by the Ways and Means Committee on the Hawley Bill on March 7th and 8th; indications are that the Bill will be favorably reported by the Committee.

The Bill follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That there shall be in the Department of the Treasury a bureau to be known as the Bureau of Narcotics and a Commissioner of Narcotics who shall be at the head thereof. The Commissioner of Narcotics shall be appointed by the President, by and with the advice and consent of the Senate, and shall receive a salary at the rate of $9000 per annum. The commissioner shall make an annual report to Congress.

SEC. 2. (a) The Secretary of the Treasury may, without regard to the civil service laws, appoint one deputy commissioner, and subject

to the provisions of the civil service laws and in accordance with the Classification Act of 1923, as amended, appoint such other officers and employees as, in the judgment of such Secretary, are necessary to execute the functions vested in such bureau. The Secretary of the Treasury is authorized to designate any officer or employee of the Treasury Department to act as Commissioner of Narcotics during the absence or disability of the Commissioner of Narcotics, or in the event that there is no Commissioner of Narcotics.

(b) In order to aid in the detection and prevention of the unlawful importation of narcotic drugs into the United States, the Commissioner of Narcotics may designate certain officers of the Bureau of Narcotics for assignment to duty at ports of entry or other places specified by such commissioner. Such officers shall, during the period of such assignment and at such ports and places, have the same power and authority as custom officers have in the enforcement of the narcotic drug laws of the United States.

SEC. 3 (a) The Federal Narcotics Control Board established by the Narcotic Drugs Import and Export Act, as amended, is hereby abolished, and all the authority, powers, and functions exercised by such board are hereby transferred to and shall be vested in and exercised and performed by the Commissioner of Narcotics.

(b) All rights, privileges, powers and duties conferred or imposed upon the Commissioner of Prohibition or any officer or employee of the Bureau of Prohibition in respect of the taxation, importation, exportation, transportation, manufacture, production, compounding, sale, exchange, dispensing, giving away or possession of narcotic drugs are hereby transferred to, conferred and imposed upon, the Commissioner of Narcotics.

(c) All the officers and employees in the Bureau of Prohibition who are exclusively engaged, on the date this Act takes effect, in the administration or enforcement of any laws relating to narcotic drugs, except the Commissioner of Prohibition, are hereby transferred to the Bureau of Narcotics without change in classification or compensation.

(d) All the official records, papers and property (including furniture and office equipment) in the Bureau of Prohibition pertaining to or in use in the administration or enforcement of any narcotic drug laws are hereby transferred to the Bureau of Narcotics.

(e) All unexpended balances of appropriations under the control of the Bureau of Prohibition for the enforcement of any laws relating to narcotic drugs and available on the date this Act takes effect shall be available for expenditure by the Bureau of Narcotics in the same manner and to the same extent as if the Bureau of Narcotics had been directly named in the laws making such appropriations.

(f) All orders, rules and regulations in respect of any laws relating to narcotic drugs which have been issued by the Commissioner of Prohibition and the Federal Narcotics Control Board and which are in effect on the date this Act takes effect shall, after such date, continue in effect to the same extent as if the transfer had not occurred, until the Commissioner of Narcotics, with the approval of the Secretary of the Treasury, shall modify, supersede or repeal the same.

(g) All proceedings, investigations and other matters pending in or before the Bureau of Prohibition and the Federal Narcotics Control Board in respect of the administration or enforcement of any laws relating to narcotic drugs shall be continued and brought to final determination before the Bureau of Narcotics.

SEC. 4. The Narcotics Division in the office of the Surgeon General of the United States Public Health Service, Treasury Department, as created by the Act approved January 19, 1929, shall be known as the Division of Mental Hygiene; and all the authority, powers and functions exercised by such Narcotics Division are hereby transferred to the Division of Mental Hygiene, and the medical officer of the Public Health Service in charge of said division shall hold the rank and receive the pay and allowances of Assistant Surgeon General while so serving. The Surgeon General of the Public Health Service is authorized and directed to make such studies and investigations as may be necessary of the abusive use of narcotic drugs; of the quantities of crude opium, coca leaves and their salts, derivatives and preparations, together with such reserves thereof, as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States; and of the causes, prevalence and means for the prevention and treatment of mental and nervous diseases; and shall report to the Secretary of the Treasury not later than the 1st day of September each year the results of such studies and investigations. The results of such studies and investigations of the quantities of crude opium, coca

leaves or other narcotic drugs, together with such reserves thereof, as are necessary to supply the normal and emergency medicinal and scientific requirements of the United States shall be made available to the Commissioner of Narcotics, to be used at his discretion in determining the amounts of crude opium, coca leaves or other narcotic drugs to be imported under the Narcotic Drugs Import and Export Act, as amended. The Secretary of the Treasury is hereby authorized to appoint such professional, technical and clerical assistants as may be necessary for carrying the provisions of this section into effect.

SEC. 5. Any person, corporation, association or partnership aggrieved by any order, rule, regulation, ruling or decision of the Commissioner of Narcotics or by his failure to rule upon or decide any matter presented to him by proper application, may appeal therefrom to the Secretary of the Treasury, who may affirm, reverse or modify such action or failure to act of the Commissioner of Narcotics in such manner and to such extent as to the Secretary of the Treasury may seem equitable and just. Such appeal shall be taken within thirty days after the apellant shall have received notice of the action of the Commissioner of Narcotics from which the appeal is to be taken, or in case of the failure of the Commissioner of Narcotics to act no appeal can be taken until after the expiration of thirty days from the time said Commissioner of Narcotics is formally requested to act.

SEC. 6. The Secretary of the Treasury shall coöperate with the Secretary of State in the discharge of the international obligations of the United States concerning the traffic in narcotic drugs.

S. 3367.

Senate Bill 3367 by Mr. Thomas seeks to amend Section 1 of "An Act to establish two United States narcotic farms for the confinement and treatment of persons addicted to the use of habit-forming narcotic drugs who have been convicted of offenses against the United States, and for other purposes" (Public, Numbered 672, Seventieth Congress), approved January 19, 1929. It follows:

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That Section 1 of "An Act to establish two United States narcotic farms for the confinement and treatment of persons addicted to the use of habit-forming narcotic drugs who have been convicted of offenses against the United States, and for other purposes" (Public, Numbered 672, Seventieth Congress), approved January 19, 1929, to be amended to read as follows:

"That when used in this Act—

"(*a*) The term 'habit-forming narcotic drug' or 'narcotic' means opium and coca leaves and the innumerable alkaloid derived therefrom, the best known of the alkaloids being morphia, heroin and codeine, obtained from opium, and cocaine derived from the coca plant; all compounds, salts, preparations or other derivatives obtained either from the raw material or from the various alkaloids; Indian hemp and its various derivatives, compounds and preparations, and peyote in its various forms: *Provided*, That peyote for sacramental purposes may be grown, sold, purchased, bartered, transported, imported, exported, delivered, furnished and possessed; and the commissioner may, upon application, issue permits therefor.

"(*b*) The term 'addict' means any person who habitually uses any habit-forming narcotic drug as defined in this Act so as to endanger the public morals, health, safety or welfare, or who is or has been so far addicted to the use of such habit-forming narcotic drugs as to have lost the power of self-control with reference to his addiction."

MEDICINE SALES ONLY ON PRESCRIPTIONS PROPOSED.

An amendment to the penal law introduced by New York Assemblyman Lefkowitz reads as follows: Any person except a duly licensed physician or physio-therapist who shall hereafter sell, retail or furnish to any person any medicine, instrument or appliance, or other commodity of a therapeutic nature or designed to give therapeutic relief without requesting and receiving from such person the written order or prescription of a duly licensed physician or physio-therapist authorizing the use of the same, shall be guilty of a misdemeanor.

CHANGE OF DATE OF ARIZONA BOARD OF PHARMACY EXAMINATION.

The Arizona Board of Pharmacy has found it necessary to change the dates for holding examinations from April 9th to April 16th, the examination will continue until the 18th. Applications for registration, or inquiries for information should be addressed to Secretary Arthur Lee Phelps, 725 East Fillmore Street, Phoenix.

BOOK NOTICES AND REVIEWS.

Memoranda of Toxicology. By MAX TRUMPER, B.S., A.M., Ph.D. Consulting Clinical Chemist and Toxicologist, in charge of the Psycho-Biochemistry Laboratory, Graduate School, University of Pennsylvania. 214 + pages about 4½" x 6". Publishers P. Blakiston's Son & Co., Inc., Philadelphia. Price $1.50.

This book is partly based on "Tanner's Memoranda of Poisons." The contents are divided into four parts and an appendix has been added in which treatment of insect bites and first aid methods are given consideration. The chapters of Part I deal with general toxicology and corrosives; those following consider simple irritants, specific irritant poisons and neurotic poisons.

The definition for a "poison" is quite as variable as the term "antidote." The former finds application to a substance or (perhaps) a means which produces functional disturbance that imperils health or life; an antidote corrects the disturbance by neutralizing the action of the poison, protecting the organs against injurious effects, or otherwise; strychnine and sugar may be antidotes or poisons.

Chapter I gives consideration to the definition and mode of action of poisons and in the succeeding nine chapters diagnosis, detection and legal phases are discussed. The next fourteen chapters deal with irritant poisons and the concluding chapters treat of narcotic poisons, in which are included narcotics, anæsthetics, depressants and asphyxiants. The discussions in the book are brief but give needed information for most cases of poisoning; reasoning and good judgment are essential for successful treatment. Each case presents individual phases which must be considered by the doctor and, likewise, the poison and the antidote or treatment, so that the dangers brought about by the poison will not be increased; hence, toxicology presents interesting studies for both physician and pharmacist.

The book is a handy volume for the library of the physician and pharmacist; the information contained has value for others who are brought in contact with poisoning cases; the suggestions serve a useful purpose in emergencies, but the services of a physician should promptly be called for.

CANADIAN FORMULARY.

A "Canadian Formulary" is contemplated by the Canadian drug and medical groups. Two committees have been provided for; one for editing the book and the other for financing the publication.

The undertaking is receiving serious consideration and it is expected that work on the Formulary will soon be under way, under the encouragement of the Canadian Pharmaceutical Association. It has been stated that the book should be for physicians and therefore contain such formulas as represent thoughtful and useful preparations that they will use. The arrangement should be so complete as to cover the whole realm of types of medication, *i. e.*, lotions, ointments, sprays, liniments, etc. That they must be attractive enough so that they will be prescribed by the physicians; the formulas should be brought to their attention by pharmacists and the medical press. The book should serve as a guide so that preparations therein, wherever dispensed, will be uniform, not only in composition but in color and flavor.

A long list of drugs has been suggested for inclusion.

BOUND VOLUME OF RESEARCH BULLETINS.

A stoutly bound volume of its research bulletins and case studies has been issued to members by the National Wholesale Druggists' Association. The book contains seventeen bulletins and fifty-four case studies.

A useful alphabetical index at the end of the volume shows where various individual facts and problems discussed in the text may be found.

Surgeon General Ireland's statutory retirement occurs May 1931; his term of office ends October 30th, but it may be that he will be reappointed to office until "age retirement." He served as Surgeon General during the very trying period of the war with signal success, and he has given twelve years of service in that capacity.

Dr. James J. Durrett has accepted the position of State Health Officer of Alabama and will shortly resign as chief of the office of drug control in the Food, Drug and Insecticide Administration of the United States Department of Agriculture. He will retain his present duties until about the middle of April. No successor has yet been selected.

SCIENTIFIC NOMENCLATURE AND STYLE.*

The close connection of the Medical Research Council (British) with the various bodies concerned in the preparation of the next British Pharmacopœia lends additional importance to a pamphlet, issued by its publications' department (though not on sale to the public), entitled "Notes upon the Preparation of Reports for Publication." It has been said—perhaps with less regard for truth than for the launching of an epigram—that men of science are the only people who have anything worth saying and the only people who do not know how to say it. However that may be, writers of scientific monographs may with advantage make themselves acquainted with the contents of the practical notes supplied by the Council. Not every worker in the many fields of science, for instance, uses, or is likely to use, "g." as the abbreviation for gram (which, by the way, the Council spells "gramme"), or converts a diphthong in words of Latin origin into two separate letters. Section 10 of the pamphlet, headed "Chemical Nomenclature," may be quoted almost in its entirety:

The acid salts of acids containing more than one replaceable hydrogen atom should be described by naming the actual cations which they contain: *e. g.*, $NaHSO_4$, sodium hydrogen sulphate (not acid sodium sulphate). . . . .

Substances containing basic groups should always have names terminating in ine: *e. g.*, aniline, not anilin; choline, not cholin; creatine. . . . .

The ending in is restricted to certain neutral compounds, *viz.*: carbohydrates, glycerides, lipins, glucosides, and proteins: *e. g.*, dextrin, palmitin, lecithin, amygdalin, albumin.

Most of the amino-acids derived from proteins (not proteids) follow this rule: *e. g.*, leucine, glycine (not glycocoll), histidine, proline, thyroxine. The amino-acid tryptophan should not be spelled with a terminal *e*, the ending ane being reserved for saturated hydrocarbons, *e. g.*, methane, propane.

All hydroxyl derivatives of hydrocarbons (alcohols) should have names ending in ol: *e. g.*, glycerol (not glycerine), mannitol (not mannite), dulcitol (not dulcite), erythritol (not erythrite), cholesterol (not cholesterin), resorcinol (not resorcin).

The names of compounds which are not alcohols but have been given trivial names, commonly used, ending in ol, should be spelled with a terminal "e:" *e. g.*, anisole, indole, scatole.

The term lipin (not lipoid) should be used to designate the fatty substances containing either nitrogen or nitrogen and phosphorus (lecithin, kephalin, phrenosin, kerasin, etc.). "Lipoid" (or better "lipodal") may be used adjectivally.

That which is justifiable on etymological or other grounds may not always be expedient; and, as the writ of the Council does not run on the Continent, we are inclined to think that it would be preferable if a certain latitude was allowed until questions of scientific nomenclature are agreed on internationally. On the question of style, the pamphlet, with the best of intentions, is a thought too drastic to fit the facts of the case.

We read: "It is a common experience of the Council that in revision of manuscripts submitted to them a 10 to 20 per cent reduction in length can be readily effected by attention to arrangement and by avoiding redundant or reduplicated sentences." Appendix I of the pamphlet consists of words or phrases with "shorter and better equivalents," arranged in parallel columns. Many of the alternatives recommended are admirable, but some are almost pedantic. To make the bald suggestion that "often" should be used in place of "frequently," for example, is to overlook the common circumstance that any one word may easily become overused in the course of even a short paper. Again, to give "much" or "significant" as substitutes for "considerable" is less than adequate—incidentally, "significant" contains only one letter less than "considerable"—for "considerable" is sometimes a concise word for "worthy, in the circumstances, of consideration" and sometimes a way of expressing "standing on a high (or very high), but not quite the highest, level." Even the pamphlet itself is not invariably impeccable in matters of style: thus, in the paragraphs we have just quoted, the placing of "," ";" and ":" before "*e. g.*" is apparently not governed by any principle. Contributors to the Medical Research Council's series of reports will, of course, find the guidance of these twenty-two pages of great—we had almost written "considerable"—value; and authors of British Pharmaceutical Conference papers who are writing for the first time may also study them with profit. After all that can be said as to literary excellence, the stylist in science is of rare occurrence.

* *The Chemist & Druggist*, Jan. 11, 1930.

BULLETINS OF THE DRUG-TRADE BUREAU OF PUBLIC INFORMATION.

Director Robert P. Fischelis of the Bureau of Public Information has issued three more bulletins—3, 4 and 5. The third relates to the coming revision of the Pharmacopœia and the efforts of Chairman E. Fullerton Cook to secure information relative to the use and disuse of drugs and preparations, as a guidance in the revision. The fourth bulletin deals with Pharmacy Corps Bill, which seeks to improve the status of pharmacy and its service in the Army. Aside from reference to certain conditions, the hearing on the Bill, the progress of the work of the Committee, the bulletin concludes with a statement that present conditions do not stimulate a large interest in many highly qualified pharmacists to take up pharmacy in the Army. Bulletin 5, relates to the National meetings in Baltimore and in Washington; in Baltimore during the week of May 5th and in Washington during the next. These bulletins serve a good purpose; the wide publicity given thereby has a large part in establishing a better acquaintance of the public with pharmacy, its services and promotions.

Since the foregoing was put into type *Bulletins* 6 and 7 have been sent out to the press. The first speaks of "First Aid Week" and carries statistics and information for the public and is suggestive of the things needed and to be had in drug stores. The other points out the great work accomplished when Dr. Lyman Spalding laid the foundation for the United States Pharmacopœia and brought the first edition to completion. The purpose of the publicity is to interest the public and particularly those of the medical professions in having Dr. Lyman Spalding nominated for the Hall of Fame, New York University. It is hoped that many expressed their preference for Dr. Spalding by ballot (see September JOURNAL A. PH. A., p. 919, p. 924, p. 947, p. 949, p. 952).

HOTEL RATES, AMERICAN PHARMACEUTICAL ASSOCIATION, BALTIMORE, MD.

All Rooms with Bath.

Hotel Emerson:—*Headquarters:*—Single room, one person, $3.50 per day; Double room, two persons, double bed, $5.00; Double room, two persons, single beds, $6.00.

Lord Baltimore:—Single room, one person, $3.50 to $6.50 per day; double room, two persons, double bed, $5.50 to $8.50 per day; double room, two persons, single beds, $6.50 to $10.00 per day.

Southern Hotel:—Single room, one person, $3.50 to $6.50 per day; double room, two persons, double bed, $5.50 to $8.50 per day; double room, two persons, single beds, $6.50 to $10.00 per day.

For the United States Pharmacopœial Convention, Washington, D. C.

Hotel Willard:—Single room, $3.00; with bath, $5.00 to $8.00; double room without bath, two persons, $5.00; with bath, $7.00 to $9.00 per day.

The Raleigh:—Single room and bath, $4.00 to $5.00; double room and bath, $5.00 to $7.00; double room and bath, single beds, $7.00 to $9.00 a day.

The Washington:—Single room, one person, $5.00 to $7.00; two persons, double bed, $7.00 to $8.00; double room, two persons, double bed, $7.00 to $8.00; twin beds, two persons, $8.00 to $12.00 a day; all rooms with private bath.

Hotel Powhatan:—Single room with bath, one person, $4.00 to $5.00; double room, two persons, $6.00 to $9.00 a day; $8.00 to $9.00 rooms have twin beds.

Hotel Harrington:—Single room, Court sides, $2.50 to $3.50; double room, Court side, $4.00 to $5.00; single room, street side, with bath, $4.00 to $4.50; double room, street side, with bath, $4.00 to $8.00 a day.

PLANT SCIENCE SEMINAR.

The Eighth Annual meeting of the Plant Science Seminar will be held in Washington, D. C., May 15th, 16th, 17th; place will be announced later.

EMIL ADOLPH GESSNER.

Captain Emil A. Gessner, member of the A. PH. A. since 1878, died at his home in New Haven, Conn., on February 3rd, aged 84 years. A sketch of the deceased will be found in the November JOURNAL for 1928, on page 1071. He was the owner of Apothecaries Hall, the oldest pharmacy in continuous existence in New Haven, and at the time of his death he had been in business for seventy years. He is survived by his widow and six children to whom sympathy is expressed.